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**HFM 6x Gen2.0 Reader (HFM 6xS) Rev2.3 EN  
SECS/HSMS**

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## 1. Introduction

These operating instructions correspond with the "Directive 1999/5/EC of the European Parliament and the Council on radio equipment and telecommunications transmission equipment and the mutual recognition of the conformity"



These operating instructions are intended for the operator who must pass these on to the personnel responsible for installation, connection, use, and repairs of the machine.

The operator must ensure that the information contained in these operating instructions and in the accompanying documents has been read and understood.

The operating instructions must be kept at a known place that is easy to reach, and they must be consulted if there is the slightest doubt.

The manufacturer assumes no responsibility for damage to persons, animals, or objects or to the unit itself arising from the improper use or the disregard or insufficient consideration to the safety criteria contained in these operating instructions or based on modifications of the unit or the use of unsuitable replacement parts.

The copyright for the operating instructions lies solely with



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As of: January - 2017

## HFM 6x Gen2.0 Reader

### 1.1 Using the device

The device is exclusively used to read and write passive HF transponders.

Any other use of the machine or any use beyond its intended purpose is considered non-intended and thus improper.

In this case, the device safety and the device protection provided may be compromised. HERMOS AG is not liable for damages resulting from such use.

The device was developed for the use in an industrial environment as a built-in device in other systems. It was not developed as a stand-alone or mobile device in a non-industrial environment, such as domestic, vehicle or open air use.

Intended use also includes the following:

- Following all the operating instructions
- Following all the safety instructions

Improper use, which can endanger the unit, the user and third parties, include:

- The use of the device contrary to its intended use
- Changes to the device as well as attachments and conversions
- Operating the unit when there are obvious problems

---

#### **Danger of injury due to unauthorised modifications**

**WARNING**

There are risks from unauthorised modifications on the device.

Only original spare parts from the manufacturer must be used. No modification, attachment or conversion may be performed on the device without the permission of HERMOS AG.

---

#### **Danger of injury and interruption of operation due to improper use**

**WARNING**

There are risks through the improper use of the device.

The device must only be used according to its intended use.

---

## 2. Version history

Version	Date	Author	Amendments
2.0	2020/24/04	HERMOS AG MZ	Initial version HFM6xS Reader
2.1	2020/30/06	HERMOS AG RK	Naming: HFM6x Gen2.0 Parameters revised Software versions revised DeviceDiscoverer HF test module Chapter 9.2 Change of Protocol IO Modul Equipmentbuffer / WIP Rack
2.2	23.02.2021	HERMOS AG MZ	Workaround scan and read failure parameter 193-199 and 179-185
2.3	14.07.2023	HERMOS AG MZ	Workaround revised HFM-Mode, extended antenna

## 3. Used abbreviations and designations

RFID	Radio Frequency Identification
HF	High Frequency 13.56 MHz ISO15693
SEMI	Semiconductor Equipment and Materials
SECS	SEMI Equipment Communications Standard
HSMS	High-Speed SECS Message Service
PoE	Power over Ethernet
DHCP	Dynamic Host Configuration Protocol

## 4. General instructions

All previous versions of this document lose their validity with the issue of this version.

We compiled the information in this document according to the best of our ability. HERMOS AG does not guarantee the accuracy and completeness of the information provided in this document and is also not liable for consequential damages based on faulty or incomplete information.

### 4.1 Objective of the product manual

The product manual serves as support and contains all the necessary information that must be followed for general safety, transport, installation and operation.

The product manual with all safety instructions (as well as all additional documents) must be:

- Followed, read and understood by all persons working with the unit (especially knowledge of the safety instructions)
- Easily available at all times to all persons
- Consulted if even the slightest doubt arises (safety)

Objectives:

- Prevent accidents
- Increase the service life and reliability of the unit
- Reduce the costs of production downtime

### 4.2 Warranty and liability

The "General Terms and Conditions of Sale and Delivery" of HERMOS AG shall apply.

The warranty period is 24 months beginning with the delivery of the device, which is verified by the invoice or other documents.

The warranty includes repairs of all damages to the unit that occur during the warranty period, and were clearly caused by material or manufacturing defects.

Warranty and liability claims in the event of personal injury or property damage are excluded if they arise from one or more of the following causes:

- Improper use of the unit
- Disregarding the information in the operating instructions
- Unauthorised structural modifications of the unit
- Insufficient maintenance and repairs
- Disaster events due to impact with foreign objects or force majeure

## 5. Safety instructions and warnings

### 5.1 Scope and symbols

Follow the general safety instructions as well as special safety instructions included in the chapters.

The unit was built according to state-of-the-art technology and recognised safety regulations. In order to prevent danger to life and limb of the user, third parties, or the unit, only use the unit for its intended purpose and in perfect condition with regard to safety.

Bodily injuries and/or property damages resulting from non-compliance with the instructions provided in the operating instructions are the responsibility of the company operating the unit or the assigned personnel.

Faults that may compromise safety must be eliminated immediately.

---

**DANGER****Risk of death, injury and property damage.**

There is a risk of danger due to disregard of the product manual and the safety information contained therein.

Read the product manual carefully before putting the unit into operation for the first time. Fulfil all required safety conditions.

---

### 5.2 Safety symbols - according to DIN 4844-2

The following special safety symbols in accordance with DIN 4844-2 are used at the corresponding passages in the text of this product manual and require special attention depending on the combination of the signal word and symbol.

---

**WARNING****Risk of injury due to disregarding the safety symbols.**

Risks exist when disregarding warnings in the operating instructions.

Follow all warnings.

---

### 5.2.1 Mandatory signs

	<b>Observe additional information</b>		<b>Use safety goggles</b>
	<b>Wear ear protection</b>		<b>Wear safety shoes</b>
	<b>Important note</b>		

### 5.2.2 Warning signs

	<b>Warning of a hazardous area</b>		<b>Warning of hazardous electrical voltage</b>
	<b>Warning of electromagnetic radiation</b>		<b>Warning of flammable substances</b>
	<b>Warning of explosive substances</b>		<b>Warning of electrostatically sensitive components</b>

### 5.2.3 Prohibition signs

	<b>Unauthorised access is prohibited</b>		<b>Fire, open flame and smoking prohibited</b>
	<b>Switching prohibited</b>		<b>Prohibited</b>

## 5.2.4 Other signs

	<p><b>Dispose of packaging material according to rules and regulations</b></p>		<p><b>Recycling</b></p>
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## 5.3 Obligations

### 5.3.1 Operator's obligations

A safe condition and use of the unit is a requirement for a safe operation of the unit. For that reason, the operator has the obligation to ensure that the following points are adhered to:

- ➔ The unit may only be operated by trained and authorised personnel.
- ➔ Prohibit unsafe or dangerous working methods! If necessary, check the conduct and actions of its personnel!
- ➔ Have personnel who must be trained, instructed or within the scope of general training work only on the unit under the supervision of an experienced person!
- ➔ Have the personnel confirm by their signature that the operating instructions have been understood!
- ➔ Precisely establish responsibilities according to the various task areas (operation, installation)!
- ➔ Operating personnel must be required to immediately report any occurring and identifiable safety deficiencies to their superior!

## HFM 6x Gen2.0 Reader

### 5.3.2 Responsibilities of operating personnel

The operating personnel are obligated to contribute to the prevention of work accidents and their consequences by their personal conduct.

---

#### Risk of injury due to insufficient personnel qualifications

**WARNING**

There are dangers to personnel and the proper operation due to inadequately qualified personnel.  
Only trained personnel may operate the unit.  
New operating personnel must be instructed by the existing operating personnel. The operator must precisely regulate the personnel's areas of responsibility, competence, and monitoring precisely.  
The personnel for the areas of responsibility mentioned above must have the corresponding qualification for this work (training, instruction).  
If necessary, this can be done by the manufacturer on behalf of the operator.  
In case of disregard, all warranty claims are void.

---

### 5.3.3 ESD Instructions

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**CAUTION**

Static electricity can damage electronic components in the unit. All persons who install or maintain the unit must be trained in ESD protection.



ESD protective measures must be applied when opening the unit.

---

-  Disconnect the power supply prior to removing or adding components!
-  Observe the basic principles of ESD protection
-  Take the appropriate ESD precautionary measures

#### 5.4 Residual risks

Despite all precautionary measures taken, there may still be residual risks that are not apparent.

Adhering to the safety instructions, the intended use, and the product manual as a whole can reduce residual risks.

---

#### **DANGER**



#### **Danger caused by electrical current**

Electrical residual energy remains in lines, equipment and devices after shutting down the device.



Only qualified electricians may perform work on the electrical supply system.

---

#### **ATTENTION**



Disconnect the unit from the power supply system if active parts of the unit can be accessed using tools. Access is only permitted by authorised personnel.



Regularly check the electrical equipment of the unit. Regularly check all moving cables for damage within the scope of maintenance and repair work.

---

#### **DANGER**



#### **Dangers of fire and explosion**

There is a risk of fire and explosions in the vicinity of the device.



Smoking, exposed flames and fire are strictly prohibited in the vicinity of the unit. Do not store any flammable liquids within the hazardous area of the device.



A fire extinguisher must be kept in the vicinity of the device.

---

#### **WARNING**



#### **Warning of electromagnetic radiation**

Electromagnetic radiation develops when transmitting and receiving data.

Arrange the antenna in such a position that it is not in the vicinity or make contact with the human body while transmitting.

The device satisfies the standard EN50364:2010 (Human Exposure).

---

## 5.5 Supplemental instructions

- ➔ Read and understand all safety and operating instructions prior to installing and operating the device.
- ➔ This documentation was written for specifically trained personnel. The installation, operation and error handling may only be carried out by specifically trained personnel.
- ➔ Keep these instructions. Keep this documentation in a location that is accessible to all personnel involved with the installation, use, and error handling of the device.
- ➔ Follow all warnings. Follow all warnings on and in the device and in the documentation.
- ➔ Install the unit only in accordance with the manufacturer's instructions.
- ➔ Use only the accessories and cables from the manufacturer.
- ➔ Troubleshooting that is not described in the chapter ➔ service and troubleshooting may only be performed by the manufacturer.
- ➔ When connecting cable connections, only pull on the plug and not on the cable.
- ➔ Only use spare parts specified by the manufacturer.

The provisions of the accident-prevention regulations of the government safety organisations always apply to all work on the unit.

- ➔ Applicable, legally binding accident prevention regulations.
- ➔ Applicable binding regulations at the place of use
- ➔ Technical standards for safety and professional work
- ➔ Existing environmental protection regulations
- ➔ Other applicable regulations

### 5.5.1 Regulations and certifications

The electrical design and documentation satisfy the DIN / VDE, EN / IEC regulations.

## 6. Functional description

### 6.1 General information

HF reading devices are high frequency identification systems that use radio transmission to read or write data of HF transponders (13.56 MHz), which operate as tamper-proof electronic tags. The HF reading devices communicate with common transponders according to ISO15693 that are available on the market.

The data is transmitted via the existing interface with the preset transmission parameters. If several interfaces are available and connected to the host, the transmission is always carried out on the most recently used interface. The data is embedded in a defined communication protocol and exchanged between the reader and host.

### 6.2 Basic functions - operating modes

During normal operation, the HF reading device supports various basic functions:

- Heartbeat function, software version query
- Scanning of transponders in the antenna area (UID)
- Reading data
- Writing data
- Setting and reading out parameters
- Setting and querying inputs and outputs

The HF devices can be set in 3 other operating modes by setting the parameters: Polling operation, sensor-triggered automatic reading and test mode.

#### 6.2.1 Normal operation

During normal operation, the HF reading device is immediately ready for operation after a reset. It does not perform any automatic actions in this mode (standby). During normal operation, actions are triggered by protocol commands from the host.

A scanning procedure or reading in the data area is initiated by a command of the host system using the communication protocol.

In addition to the actions triggered by the host, a corresponding message can be automatically sent to the host and an automatic reading operation can be started by activating or releasing a sensor. (Parameter 26ff (0x1A) )

When the reading operation is successful, the read data is immediately transmitted to the host. If several antenna ports are occupied simultaneously, the reading operations are processed sequentially.

Writing actions (data saved to a transponder) are generally only possible via commands from the host.

#### 6.2.2 Polling mode

HF reading devices can be set into a continuous reading state, which is referred to as polling mode. The device then performs reading operations at regular intervals and outputs the corresponding data of the read HF transponder. (Parameter 48ff)

The reading device also continues carrying out protocol messages in polling mode. This may, however, result in delays in the poll rhythm.

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### 6.2.3 Sensor-triggered operation

Device versions with IO module (at least 1 input) offer the function of a sensor-triggered automatic reading operation. The reading device automatically performs a reading operation when the input is triggered. The type of action (inventory/reading) can be defined with parameters 26ff and 30ff.

The read data is automatically sent to the host with the S18F91 message.

The result of the reading operation (successful, not successful) can be optionally output via two outputs of the antenna connection.

### 6.2.4 Test module

The HERMOS HF reading devices support a test mode that facilitates setting up the antenna and checking the reading ranges during commissioning. HF reading devices feature several DIP switches on the housing. These switches can be used to activate test mode.

The functions in test mode are described on a sticker located on the reading device housing.

See [capture 6.4.2 Testmode sticker](#) und [capture 7.7 DIP switch](#).

The evaluation of the DIP switch depends on parameters 18 (0x12) and 19 (0x13).

The test action to be performed is determined by [parameter 149 \(0x95\)](#).

### 6.2.5 Workaround

The Hermos HF readers support a workaround mode that attempts to recognize a number of expected transponders in the field under difficult reading conditions.

The number of expected transponders is defined by [parameter 68 \(0x44\)](#).

If the reader detects fewer than the defined number of transponders during a scan or read process, the scan or read process is repeated with different power levels and HF parameters in order to minimize the influence of interference sources and environmental conditions.

If incorrect readings can be avoided through these repetitions, [parameters 193-199 and 209-215](#) are incremented.



All workaround parameters are reset at every reboot of the device.

## 6.3 Illustration

### 6.3.1 Top view

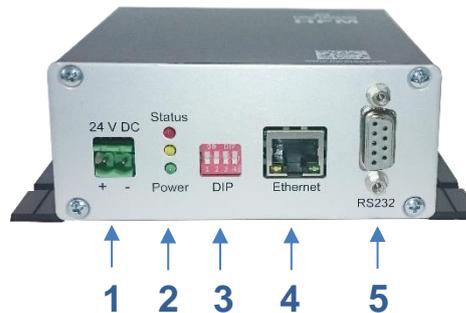
## HFM 6x Gen2.0 Reader



1. Black anodised aluminium housing
2. Reading device type imprint
3. Data Matrix Code  
[www.hermos.com](http://www.hermos.com)

**6.3.2 Front view**

1. Power supply connection
2. Status and power LEDs
3. DIP switch
4. Ethernet interface (opt. PoE)
5. RS232 interface



Component	Description
Power supply connection	Two-pin socket for the connection of the 24V DC power supply. (Optional PoE).
Power LED	The power LED indicates that the operating voltage is present and the reading device is ready for operation.
Status LEDs	The two status LEDs are used for the reading and writing feedback in test and polling mode.
DIP switch	A test mode can be activated with the DIP switches. The evaluation of the DIP switch depends on parameters 18 (0x12) and 19 (0x13).
Ethernet interface	The reading device features an Ethernet interface depending on the device model. The communication with the device can be carried out via the 10/100 BaseT interface. The Ethernet interface is offered with PoE-capability as an option.
RS232 interface	Depending on the device model, the reading device features a RS232 interface. The communication with the device can be carried out via the serial interface (9-pin Sub D) Parameter 1 (0x01) default: 19,200 baud

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### 6.3.3 Rear view

1. Connections for inputs and outputs (optional)
2. Antenna connections 1 - 6



Component	Description
Connections for inputs and outputs Port 1 - 6	Depending on the device variant, the reader has connections for inputs and outputs. The number of inputs and outputs and the connector type can be customized. Variants see chapter <a href="#">7.9 External inputs and outputs</a> .
Antenna connections Port 1 - 6	SMA or LEMO connections for connecting the antennas. The number of the antenna connection corresponds to the protocol HeadID/TARGETID.

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### 6.4 Technical data

Technical data	
Voltage (protected against reverse polarity)	18 – 33 V DC
Power consumption (passive, reading, pulse-by-pulse)	70mA@24V, 200mA, max.400mA
Fuse type Nano2	375 mA
Operating temperature	-0 to 50°C
Storage temperature	-25°C to 70°C
Permissible humidity at 50°C	25 – 80%
Transmission frequency	13.56MHz , ISO 15693
Transmission power	1.1 W
Output resistance	50 Ω
Ethernet interface	10/100 BaseT, (PoE optional)
Protocol	SECS / HSMS / ASCII
Housing material	Aluminium, black anodised
Reader dimensions	130 x 124 x 45 mm
Weight	approx. 400 g

The device label with the CE label, article and serial number are located on the side of the reading unit.

#### 6.4.1 Device labels

The device label is located on the reading unit housing.  
It contains a CE mark, article/serial number and the MAC address.

1. Designation
2. Article number (variants)
3. Serial number (example)
4. Order number
5. MAC Address
6. Manufacturer

HF Mid Range Reader	<b>CE</b>
P/N: HRF.R.HFM.6x.Sx.xx.20x	
S/N: 2004HAG00123	
PO: HKxxxxxx	
MAC: xx:xx:xx:xx:xx:xx	
HERMOS AG	

**HFM 6x Gen2.0 Reader****6.4.2 Test mode sticker**

The test mode sticker is located on the reading unit housing.  
Test mode is activated by setting the DIP switch 4.  
The selection of the antenna port is changed using the DIP switches 1 - 3.

	ANT					
DIP:	1	2	3	4	5	6
1	0	0	0	0	1	1
2	0	0	1	1	0	0
3	0	1	0	1	0	1
4	Test mode ON / OFF					

## 7. Installation

Follow the basic safety instructions in the chapter Safety instructions.

### 7.1 Safety instructions

	The unit is exclusively designed for indoor use in an industrial environment. The unit may only be installed indoors with a temperature and humidity level within the range of the specified technical module parameters.
	Never use the unit near or in water. Never pour liquids of any type over the unit. However, if the unit should still come in contact with liquid, disconnect it and have it checked by a technician.
	Do not install the device near heat sources such as radiators, heat registers, stoves or other devices (including amplifiers) that generate heat. Do not install the unit in a flammable environment.
	Never expose the device to extreme temperature fluctuations, since condensation otherwise develops inside the unit and causes damages.
	Do not install the device in the vicinity of voltage lines or other power lines with which they could collide (for example, drilling), which could result in serious injuries or even death.
	The device (especially the antenna) should not be installed in the immediate vicinity of electrical equipment such as medical devices, monitors, telephones, TV sets and magnetic disks, and metal objects. This could result in reduced read and write ranges.
	Never use the unit in explosive areas (such as paint warehouses).
	Do not use the device in areas where it is exposed to vibrations or shocks.
	The installation location must be adequately illuminated during the installation.
	Never install the unit during a lightning storm.
	Make sure that the installation meets the requirements of the FCC (country specific) for human exposure to radio frequencies.

## 7.2 Qualified installation personnel

	The unit must only be installed by specially trained personnel. If you have any doubts about the qualifications, please contact the manufacturer.
	If the unit is operated by untrained personnel, the reading device and or connected devices may be damaged.

## 7.3 Unpacking

The HF reading device and the accessories can be packed customer-dependent in clean room conditions. In order to maintain this condition, the devices must be unpacked in clean room conditions.

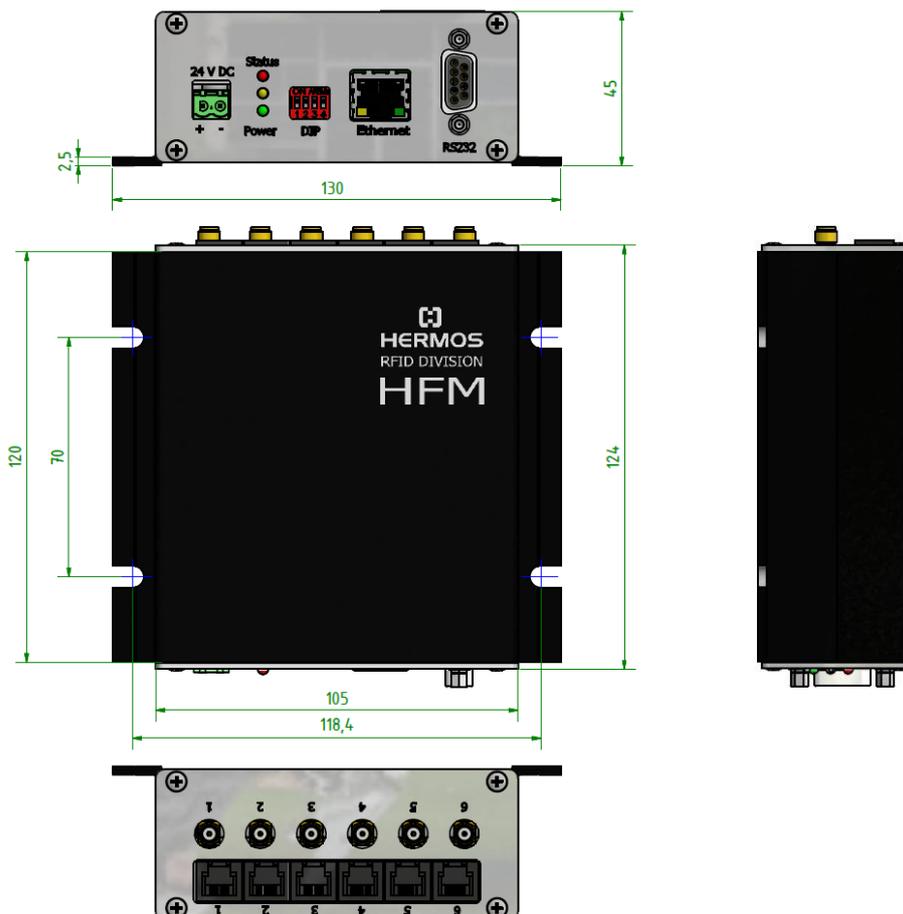
	The packaging material consists of cardboard and foil. Dispose of these materials separately under the respective regulations of your country.
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**7.4 Mounting the device**

	<p>The mounting surface must be stable, non-flammable, dry and clean. If necessary, clean it before you install the device. Only use components, cable and mounting materials provided by HERMOS. Only mount the components at the designated locations and make sure that the operating and ambient conditions specified in the technical data are always maintained.</p>
---	--

Installation dimensions:

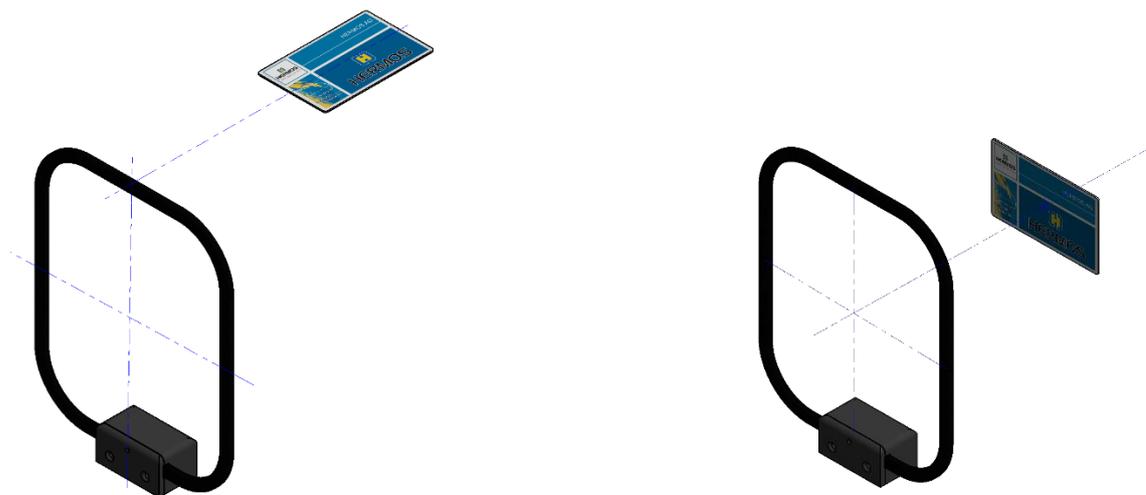


## 7.5 Installing the antenna

	When installing the antenna, observe the required reading and writing ranges. The reading device can only be used properly if the transponder is located within the reading and writing range of the antenna.
---	---

### 7.5.1 Positioning the antenna

The removal and alignment of the transport is critical to ensure reliable reading and writing. The following diagram displays the optimum alignment and position of the transponder to the antenna.



### 7.5.2 Connecting the antenna

Connect the antenna at the antenna connection at the rear of the reading unit. Observe the label here.

	Use the antennas and antenna cable from the manufacturer to ensure optimum reading and writing ranges.
---	--

## HFM 6x Gen2.0 Reader

### 7.6 Power Supply

The device can be connected to the system's internal power supply or an external power supply.

	<p>There are risks if the device is supplied with the incorrect voltage. Only use cables, plugs and adapters from the manufacturer. Observe power ratings provided in the technical data.</p>
---	---

PIN	Signal
1	+24V DC
2	0 V



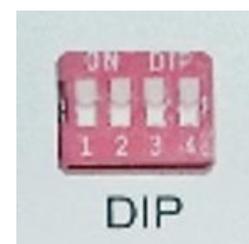
If the device is connected to the power supply, the power LED lights up. With reading devices with PoE functionality, the power supply can also be connected directly via the Ethernet interface using Power-over-Ethernet (PoE) according to IEEE 802.3af. Please note that the PoE infrastructure can provide sufficient power.

	<p>Never connect the reading device to an external power supply and a PoE cable at the same time. This can damage the reading device or the connected components.</p>
---	---

### 7.7 DIP switch

Test mode can be activated via the 4 DIP switches on the device. In test mode, a continuous reading operation is performed at the set antenna port and the result of the reading operation is displayed on the status LED. The test mode is activated by setting DIP switch 4. The selection of the antenna port is changed using the DIP switches 1 - 3.

Switch	Function
1	Antenna connection selection (Dip1,Dip2,Dip3)
2	000 ... Antenna connection 1 001 ... Antenna connection 2 010 ... Antenna connection 3 011 ... Antenna connection 4
3	100 ... Antenna connection 5 101 ... Antenna connection 6
4	Activated test mode

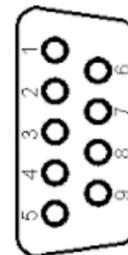


## HFM 6x Gen2.0 Reader

### 7.8 RS232 connection

The serial interface is implemented as a Sub-D connector (9-pin). A serial connection line (1:1 circuit) can be used.

PIN	Signal
1	NC
2	TxD
3	RxD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC



### 7.9 Ext. Inputs and outputs

The reading device provides options for querying input signals and setting output signals (LEDs). Depending on the device variant, the reader has different connections for inputs and outputs. The number of inputs and outputs and the used connector type can be customized.

## HFM 6x Gen2.0 Reader

### 7.9.1 IO Modul Equipmentbuffer

The IOModule equipment buffer offers 1 input and 2 outputs for each antenna port. The connections are implemented as RJ12 sockets. The IOModule equipment buffer is to be replaced in the future by the expanded IOModule WIP Rack.

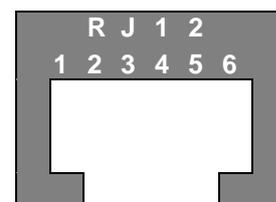
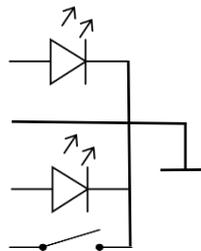
Articlenumber: HFR.R.HFM.6x.Sx.1E.xxx

Rear view:



Pin assignment:

PIN	Signal
1	LED 1 (5V max.20mA)
2	GND
3	LED 2 (5V max.20mA)
4	INPUT
5	VCC (5V)
6	NC



Front view

## HFM 6x Gen2.0 Reader

### 7.9.2 IO Modul WIP-Rack

The IOmodule WIP-Rack offers 1 inputs and 2 outputs for each antenna port. The connections are implemented as RJ12 sockets.

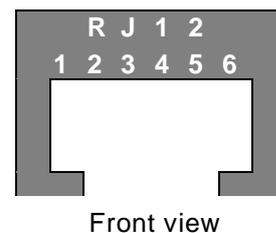
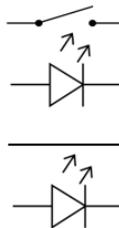
Articlenumber: HFR.R.HFM.6x.Sx.1D.xxx

Rear view:



Pin assignment:

PIN	Signal
1	Tx Display
2	VCC (+3,3V/+5V)
3	INPUT
4	LED 2 (max.10mA)
5	GND
6	LED 1 (max.10mA)



## HFM 6x Gen2.0 Reader

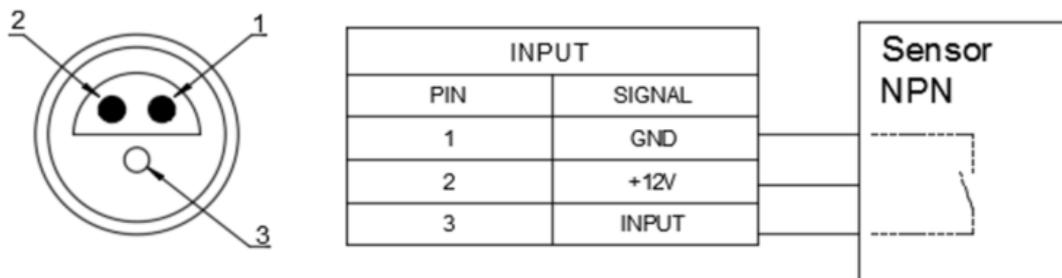
### 7.9.3 IO Modul LEMO3

The IO-Module LEMO3 offers 4 inputs. The connections are implemented as 3-pin LEMO sockets.

Rear view:



Pin assignment:



## HFM 6x Gen2.0 Reader

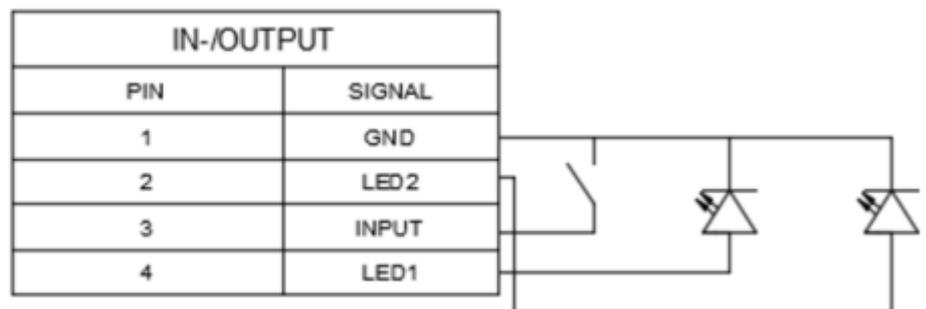
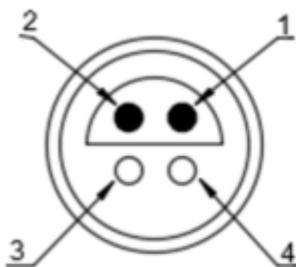
### 7.9.4 IO Modul LEMO4

The IO module LEMO4 offers 4 inputs and 8 outputs.  
The connections are implemented as 4-pin LEMO sockets.

Rear view:



Pin assignment:



## HFM 6x Gen2.0 Reader

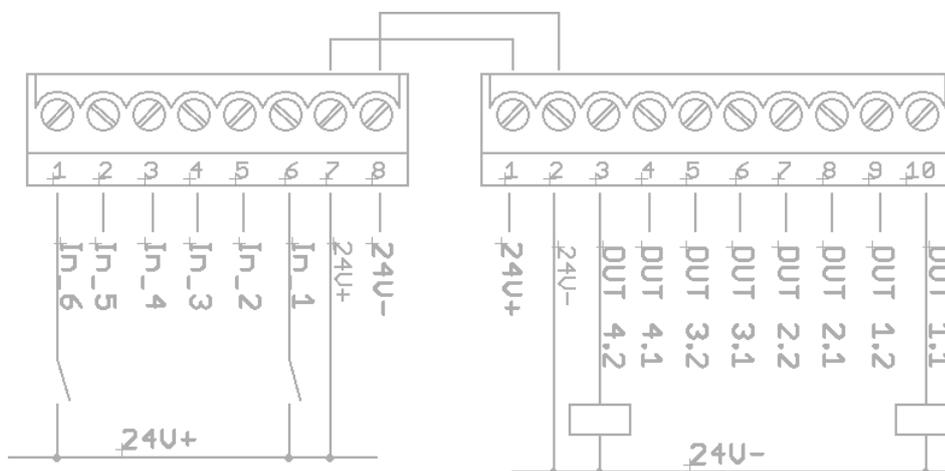
### 7.9.5 IO Modul Phoenix

The IOModule Phoenix offers 6 inputs and 8 outputs. (24V)  
The connections are realized as Phoenix MC 1.5 / 3.81mm sockets

Rear view:



Pin assignment:



## 8. Commissioning

### 8.1 Operating conditions

The following requirements must be fulfilled for smooth device operation.

1. The operating temperature must be within the scope of the values specified in the technical data.
2. The device must be connected to the power supply (provide PoE is not used).
3. An antenna must be properly connected to the reading device.
4. A transponder must be within the reading and writing ranges of the connected antenna.
5. For normal operation, deactivate test mode after installation. (All DIP switches off).

<b>Important</b> 	<p>Never expose the device to extreme temperature fluctuations. Temperature fluctuations can result in condensation moisture developing in the device and cause damage.</p>
---	---

### 8.2 The serial interface parameters

The following settings of the serial interfaces are set on delivery. The baud rate can be changed with parameter 0x01.

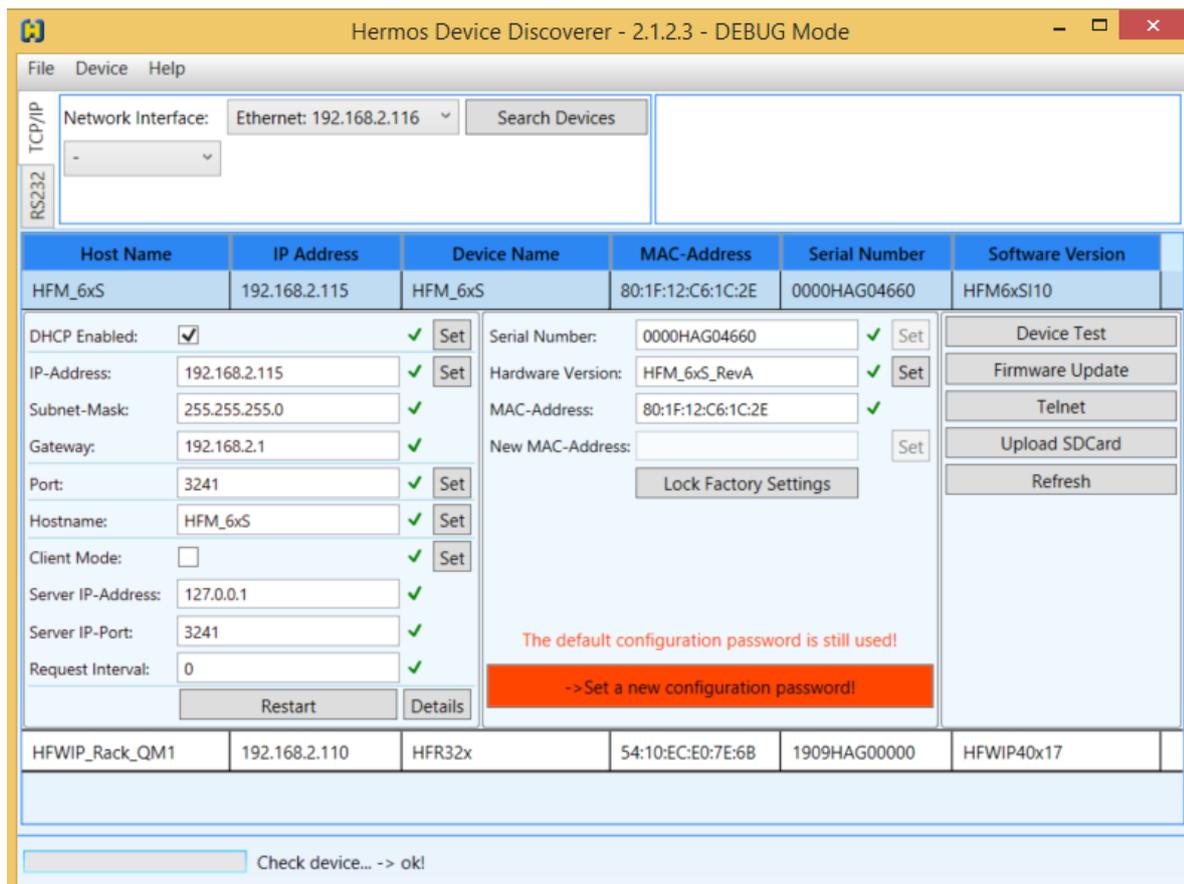
	Value
Baud rate	19200
Data bits	8
Stop bits	1
Parity	None

### 8.3 Setting up the network interface

The unit is connected to the customer network via a 10/100BaseT Ethernet interface.  
 The DHCP (Dynamic Host Configuration Protocol) is activated on delivery.

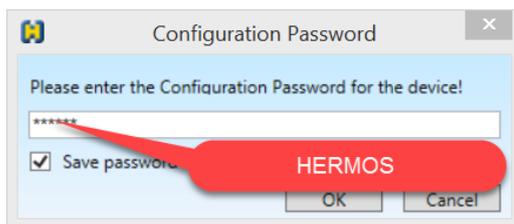
If there is not a DHCP server available in your network, a random IP address is set from the ZeroConf range (169.254.0.0/16) and operations must still be performed to obtain an IP address.

The HERMOS "Device Discoverer" is available for configuring the network setting. HERMOS components can be found in the LAN network and settings can be easily changed using the "Device Discoverer".



1. Select your network interface if you have several options on your PC.
2. Your network is automatically scanned for all HERMOS reading devices using the "Search Devices" button.

3. Select the desired reading device in the list to open the network settings.  
Here, you can edit the network settings and apply them to the reading device by pressing the respective button.



If a configuration password is requested, it is "HERMOS" in the default state.

After parameters are changed, the reading device reboots and can be read in using "Search Devices".

---

**CAUTION**

Changing network settings generally cause the reading device to reboot.  
This closes an existing HSMS host connection.

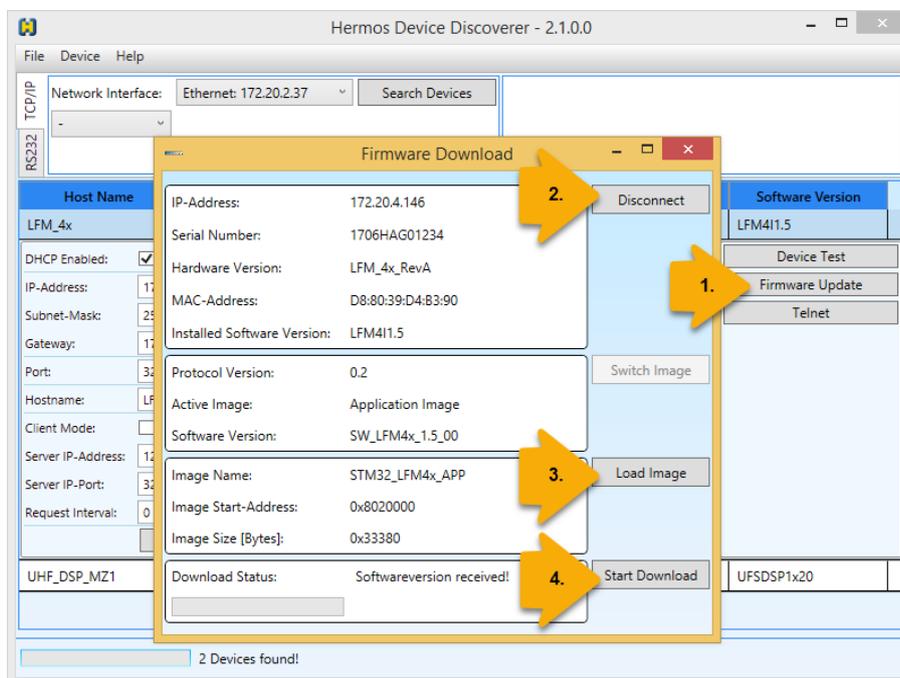
---

## 8.4 Firmware update

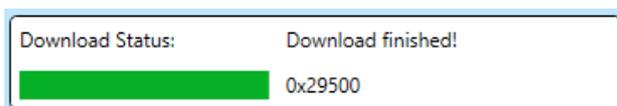
Firmware updates can also be performed using the "Device Discoverer" HERMOS. Start the tool with administrator rights and scan the network for all HERMOS devices.

To do this, mark the desired reading device and select "TCP/IP Firmware Download" or "RS232 Firmware Download" button depending on the your interface.

If a password is requested, please use "HERMOS".



1. Open the download connection by pressing the connect button.
2. Select the new firmware file using the load image button.
3. Start the download process.  
Wait until the "Download Finished" message appears.



### CAUTION



During the download process, do not disconnect the power supply or interrupt the network connection.

## HFM 6x Gen2.0 Reader

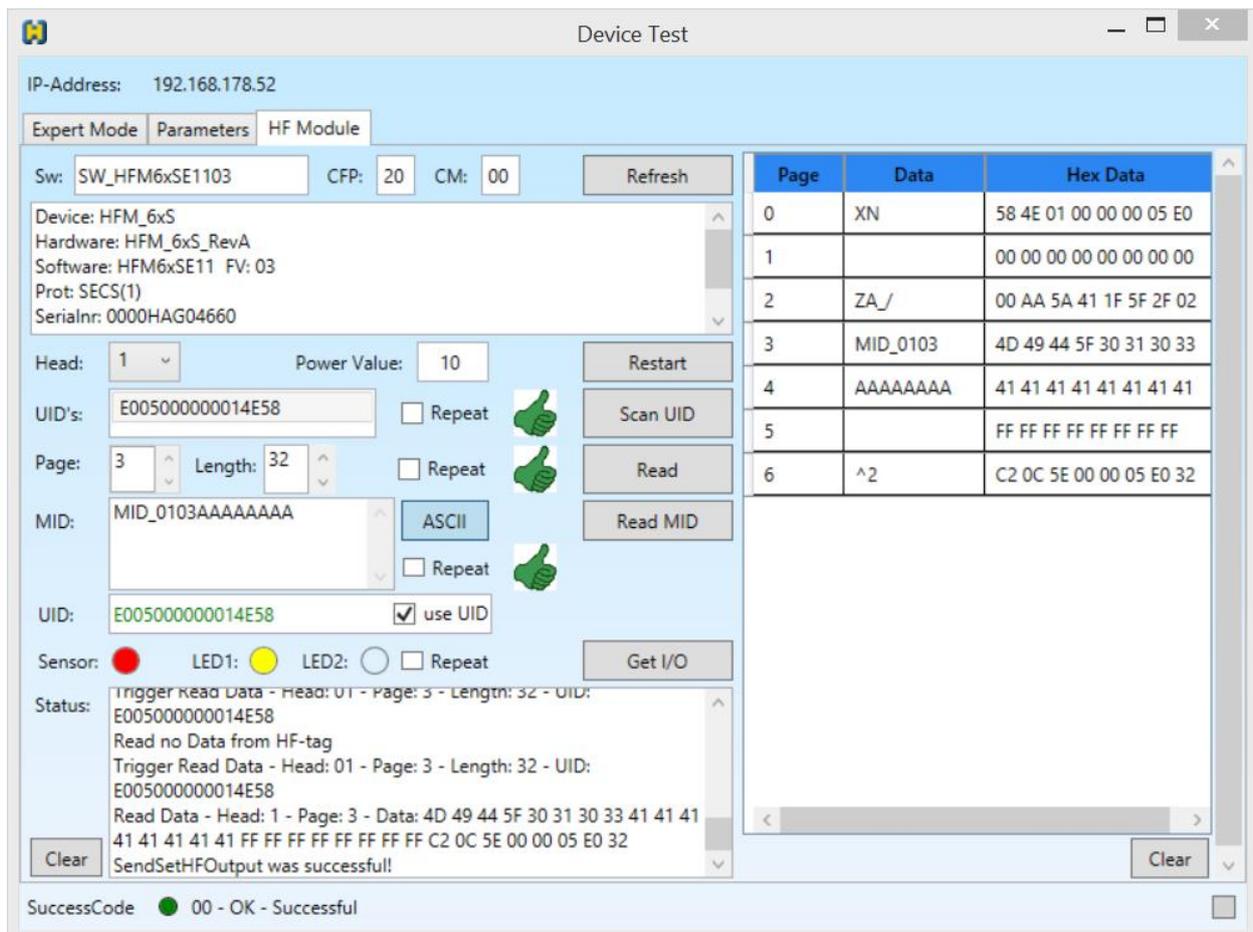
### 8.5 Devicetest with DeviceDiscoverer

Readers can also be tested with the HERMOS "Device Discoverer".

Start the tool with administrator rights and search for the HERMOS device to be tested in the network. Mark the desired reader and select the "Device Test" button regardless of your interface. Another "Device Test" view opens, with which the reader can be tested using a UDP protocol without disconnecting any existing TCP / IP connection.



The device test is only supported with the device generation HFM 6x Gen2.0. This feature is not available with earlier HFM 6x readers!



IP-Address: 192.168.178.52

Expert Mode Parameters HF Module

Sw: SW\_HFM6xSE1103 CFP: 20 CM: 00 Refresh

Device: HFM\_6xS  
Hardware: HFM\_6xS\_RevA  
Software: HFM6xSE11 FV: 03  
Prot: SECS(1)  
Serialnr: 0000HAG04660

Page	Data	Hex Data
0	XN	58 4E 01 00 00 00 05 E0
1		00 00 00 00 00 00 00 00
2	ZA_/	00 AA 5A 41 1F 5F 2F 02
3	MID_0103	4D 49 44 5F 30 31 30 33
4	AAAAAAAA	41 41 41 41 41 41 41 41
5		FF FF FF FF FF FF FF FF
6	^2	C2 0C 5E 00 00 05 E0 32

Head: 1 Power Value: 10 Restart

UID's: E00500000014E58 Repeat Scan UID

Page: 3 Length: 32 Repeat Read

MID: MID\_0103AAAAAAAA ASCII Read MID

UID: E00500000014E58 use UID

Sensor: LED1: LED2: Repeat Get I/O

Status: Trigger Read Data - Head: 01 - Page: 3 - Length: 32 - UID: E00500000014E58  
Read no Data from HF-tag  
Trigger Read Data - Head: 01 - Page: 3 - Length: 32 - UID: E00500000014E58  
Read Data - Head: 1 - Page: 3 - Data: 4D 49 44 5F 30 31 30 33 41 41 41 41 41 41 FF FF FF FF FF FF FF FF C2 0C 5E 00 00 05 E0 32  
SendSetHFOutput was successful!

SuccessCode 00 - OK - Successful

## 9. Operation

### 9.1 Operating personnel



The device should only be operated by specially trained personnel. If you have any doubts about the required qualifications, please contact the manufacturer.  
The operation of the device without special expertise can result in damages to the device or on connected devices.

### 9.2 Change of Protocol

#### 9.2.1 Information

The reader supports the ASCII or SECS / HSMS protocols for communication with a connected host system. The protocol is selected using automatic protocol recognition. The currently set protocol is displayed on the status LED during the boot process.

SECS: The red status LED stays on for approx. 1 second longer during the self-test

ASCII: The yellow status LED stays on for approx. 1 second longer during the self-test

#### 9.2.2 Automatic Protocol detection

The reader automatically adjusts to the protocol used by checking and evaluating the first message after a reset. When changing the protocol, the interface is changed accordingly and reinitialized. This process can take several seconds. Messages that have already been sent will be lost.

The newly recognized protocol is used for further communication. A new change is only possible after another reset. The automatic protocol detection can be activated and deactivated by setting parameter 0x68.



If the reader receives undefined or random characters, this can lead to an accidental protocol change if the protocol change is permitted.  
The automatic protocol detection (protocol change) can be activated via parameter 0x68. The parameter 0x69 then determines whether, when changing the protocol.

## HFM 6x Gen2.0 Reader

### 9.3 Communications protocol

The SECS I standard defines a communication interface that is suitable for exchanging messages between the semiconductor processing systems and a host. A host is a computer or computer network that exchanges the information with the systems to carry out the production.

The standard does not define the data contained in the message. The meaning of the messages must be defined by a standard that defines the message content – e.g. by the SEMI Equipment Communications Standard E5 (SECS-II).

This message record describes the communication between a reading device with SECS-I and a host. The host and the RFID reading device can communicate via a RS232 interface (SECS-I) or an Ethernet interface (10/100BaseT) with HSMS protocol. The meaning of the messages is provided in the → message details section in which the message content is defined.

#### Serial communication (SECS-I):

The data is transmitted or received as a serial bit stream with 10 bits per character in a supported data rate. A standard character has a start bit, 8 data bits and a stop bit. No parity bits or other controls are used for transmitting the individual bytes.

**Default setting: 19200 / 8N1**

Details about the data definition and the data transmission are provide in the SEMI Standard E4. (SEMI Equipment Communication Standard 1 Message Transfer SECS-I)

#### Ethernet communication (HSMS):

The reading device functions as a HSMS server. This means that it waits for a connection request from a HOST PC (client).

**TCP/IP: IP address      xxx.xxx.xxx.xxx      Port 3241**

If there is a connection request from a HOST, a HSMS connection is set up and the SECS II messages defined in the message record are transmitted from the reading device to the respective HOST and vice versa. The HSMS connection remains intact until it is specifically terminated by the host or the reading device.

All reading devices available in the network (LAN) can be operated from any HOST PC. A HSMS reading device, however, can no longer be connected to more than one HOST simultaneously.

The network settings can be changed using a configuration tool provided by HERMOS. Each change to the network settings causes the unit to reboot and thus disconnects existing communication connections.

### 9.4 Structure of a message

The communication structure and process is defined by the SEMI Equipment Communications Standards E4, E5 and E37 (SECS-I, SECS-II, HSMS).

SECS message blocks always have a specified structure that consists of 1-4 length bytes, 10 bytes of message headers and message data.

	Byte	MSB	Description
--	------	-----	-------------

**HFM 6x Gen2.0 Reader**

<b>Length</b>	0		Length without checksum
<b>Header</b>	1	R	Upper Device ID (reader ID)
	2		Lower Device ID (gateway ID)
	3	W	Upper Message ID (stream)
	4		Lower Message ID (function)
	5	E	Upper block number
	6		Lower block number
	7		System byte 1
	8		System byte 2
	9		System byte 3
	10		System byte 4
<b>Data</b>	11-254		Message data
<b>Checksum</b>	255, 256		16-bit checksum

The **length** contains all the bytes transmitted after the length byte with the exception of the two checksum bytes. The maximum block length allowed by the SECS-I is 254 bytes and the minimum is 10 bytes.

The **reverse bit** (R bit) indicates the direction of the message. The R bit (MSB) is set to "0" for messages to the reading device and "1" for messages to the host.

The **device ID** is a unique number to establish the connection with the reading device. It consists of a gateway ID (bit 0-7) that is 8 bytes long and a reader ID that is 5 bytes long. (Bit 8-14)  
 On delivery, the **device ID** is set to **00 00**. The ID can of course be changed within the validity range.

<b>Upper Device ID (Reader ID)</b>	<b>R-Bit</b> 0 0 0 0 0 0 0 0
<b>Lower Device ID (Gateway ID)</b>	0 0 0 0 0 0 0 0

Direction reading device to host

0x8000

Direction host to system (reading device) 0x0000

The **W** bit indicates whether the transmitter of the primary message wait for a reply. If the *W* bit contains the value 1, it means that a reply is expected.

The **message ID** determines the format and the content of the transmitted message. It consists of a stream and a function. The stream defines the message group and the function, the exact meaning and the syntax of the message. A primary message (request) is defined as an uneven message. A secondary message is defined as an even message (reply).

The **end bit** indicates whether a block is the last block of the message. A value of 1 means that the block is the last block. Since all messages can be transmitted in a block, the block number always has the value 1.

The **system bytes** in the header of each message are used to distinguish primary messages. The system bytes of the reply message must correspond to the system bytes of the corresponding primary message. The system bytes are incremented for each primary message.

The **checksum** is calculated as the numerical sum of the unsigned binary values of all bytes – after the length byte and before the checksum as well as in an individual block.

For more detailed information about the structure and transmission procedure, see SEMI E4 , E5 , E37 , E99.

(SEMI Equipment Communication Standard Message Transfer SECS)



## HFM 6x Gen2.0 Reader

- Scan UID and read MID S18F85 (Host → Reader)
- Query sensor state S18F95 (Host → Reader)

### 9.6 Message details

#### 9.6.1 Stream 1 (system state)

##### **S1F0: ABORT TRANSACTION (reading device <-> host)**

This message is used instead of an expected reply to cancel an action. The function 0 is defined in each stream and has the same meaning in each stream.

S1F0 (header only, no additional elements)

##### **S1F1: ARE YOU THERE REQUEST (reading device <-> host, reply)**

Determines whether the reading device or the host is online.

S1F1 W (header only, no additional elements)

##### **S1F2: ON-LINE DATA (host -> reading device)**

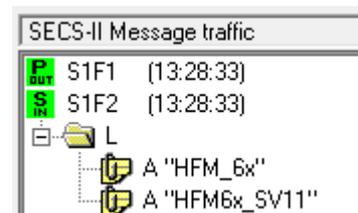
The host indicates that it is online.

```
S1F2
<L[2]
  <A[6] MDLN >
  <A[6] SOFTREV >
>
```

##### **S1F2: ON-LINE (reading device -> host)**

The reading device indicates that it is online.

```
S1F2
<L[2]
  <A[6] MDLN >
  <A[6] SOFTREV >
>
```



##### **S1F15: REQUEST OFF\_LINE (host -> reading device, reply)**

The reading device contains a request to change the communication state to "offline".

## HFM 6x Gen2.0 Reader

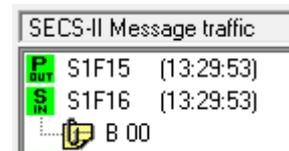
The reading device can only be set to "online" again using the message S1F17 (or reset S2F19); all other messages are cancelled by message SxF0.

S1F15 W (header only, no additional elements)

### S1F16: OFFLINE ACKNOWLEDGE (reading device -> host)

Acknowledgement

S1F16  
 <B[1] OFLACK>.



### S1F17: REQUEST ON\_LINE (host -> reading device, reply)

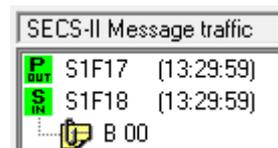
The reading device contains a request to change the communication state to "online".

S1F17 W (header only, no additional elements)

### S1F18: ONLINE ACKNOWLEDGE (reading device -> host)

Acknowledgement

S1F18  
 <B[1] ONLACK>.



## 9.6.2 Stream 2 (system control)

### S2F0: ABORT TRANSACTION (reading device <-> host)

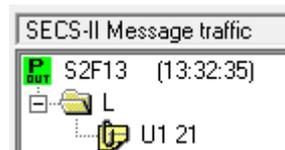
This message is used instead of an expected reply to cancel an action.

S2F0 (header only, no additional elements)

### S2F13: EQUIPMENT CONSTANT REQUEST (host -> reading device, reply)

The host requests an attribute (parameter) from the reading device.

S2F13 W  
 <L[1]  
 <U1[1] ECID>  
 >

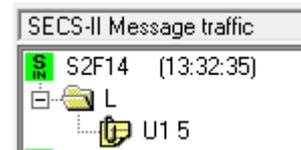


### S2F14: EQUIPMENT CONSTANT DATA (reading device -> host)

The reading device transmits the requested attribute (parameter) to the host.

```

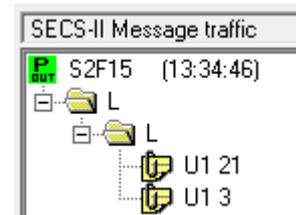
S2F14
  <L[1]
    <U1[1] ECV>
  >
  >
  
```


**S2F15: NEW EQUIPMENT CONSTANT SENT (host -> reading device, reply)**

The host changes a reading device attribute (parameter).

```

S2F15 W
  <L[1]
  <L[2]
    <U1[1] ECID>
    <U1[1] ECV>
  >
  >
  
```

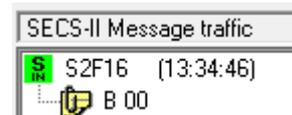

**S2F16: NEW EQUIPMENT CONSTANT ACKNOWLEDGE (reading device -> host)**

The reading device acknowledges the reading device parameter

setting.

```

S2F16
  <B[1] EAC>
  
```


**S2F19: RESET SENT (host -> reading device, reply)**

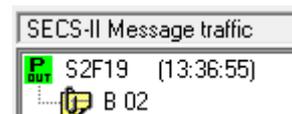
The host transmits a request to the reading device to reset the hardware and software.

If a heartbeat time (parameter 9) is set, the reading device transmits a S1F1 message once the reset operation is complete.

A power-up reset takes a few seconds.

```

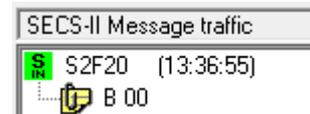
S2F19 W
  <B[1] RIC>
  
```


**S2F20: RESET ACKNOWLEDGE (reading device -> host)**

The reading device acknowledges the reset.

This message is only displayed if a software reset (RIC=2) has been triggered.

```
S2F20
<B[1] RAC>
```



### 9.6.3 Stream 3 (material state)

#### **S3F0: ABORT TRANSACTION (reading device <-> host)**

This message is used instead of an expected response to a canceled action

```
S3F0 (header only, no additional elements)
```

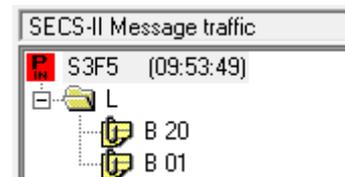
#### **S3F5: Material found (MID FOUND) (reading device -> host, reply)**

The reader sends the information that material was detected at an input sensor.

This message is only sent if a sensor is connected and activated.

( par. 26-30, 148 sensor activity / watchport)

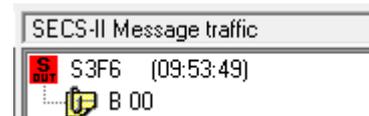
```
S3F5 W
<L[2]
<B[1] MF >
<B[1] PTN >
>
```



#### **S3F6: Material found reply (MID FOUND, ACK ) (host -> reading device)**

The host confirms the material found message.

```
S3F6
<B[1] ACKC3 >
```



#### **S3F7: Material lost (MID LOST) (reading device -> host, reply)**

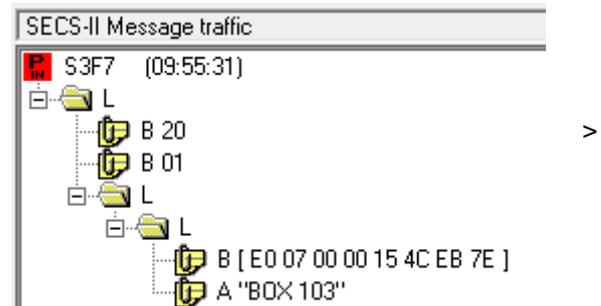
The reader sends the information that material has been removed from the input sensor.

This message is only sent if a sensor is connected and activated.

( par. 20-25, 147 sensor activity and par. 26-30, 148 watchport)

The PAGEDATA are only given if the last reading was successful.

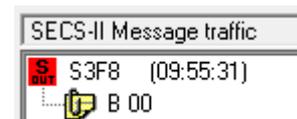
S3F7 W  
<L[3]  
<B[1] MF >  
<B[1] PTN >  
<B[1] PAGEDATA >



**S3F8: Material lost reply (MID LOST, ACK ) (host -> reading device)**

The host confirms the material lost message.

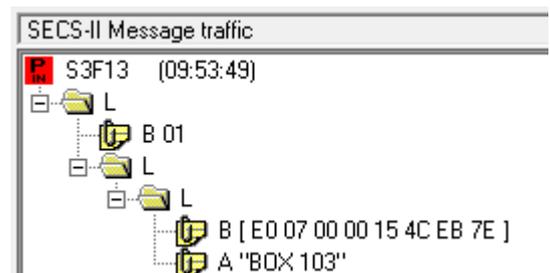
S3F8  
<B[1] ACKC3 >



**S3F13: MID read (MID READ) (reading device -> host, reply)**

The reader sends the MID of the found material to the host.

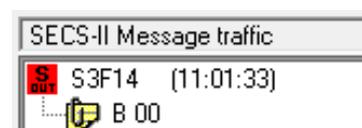
S3F13 W  
<L[2]  
<B[1] PTN >  
<B[1] PAGEDATA >  
>



**S3F14: Material read reply (MID READ, ACK ) (Host -> reading device)**

The host confirms the received MID data.

S3F14  
<B[1] MIDAC >



SECS/HSMS protocol description  
Customer documentation

**HFM 6x Gen2.0 Reader**

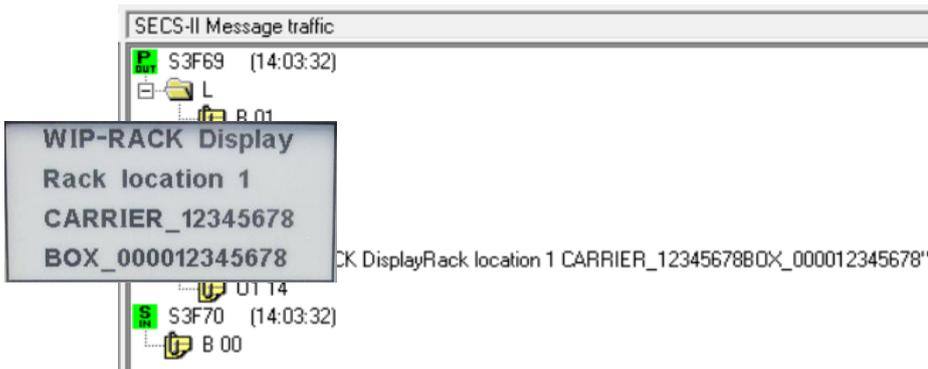
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**S3F69: Display data write (DISPLAY WRITE) (Host -> Host -> reading device, reply)**

The host writes data to the Display of the addressed antenna port.

```
S3F69 W
<L[6]
  <B PTN >
  <U1 COLUMN >
  <U1 LINE >
  <U1 CMD>
  <U1 DSPARG>
  <A DSPDATA >
  <U1 FONT> *
>
```

**Write display 1 (line 0-3) black, white:**



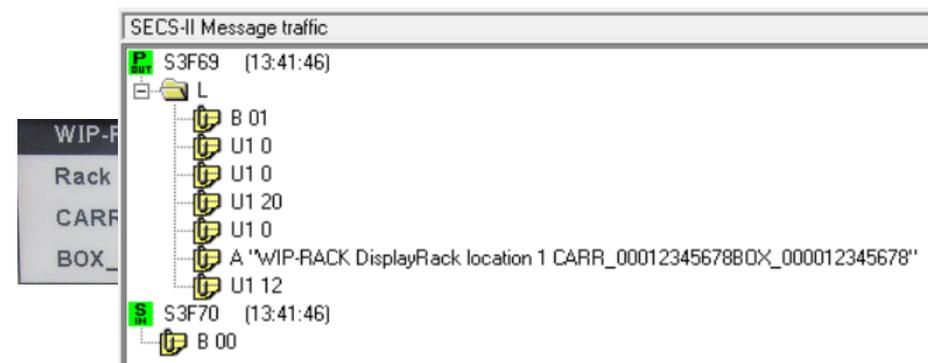
SECS-II Message traffic

S3F69 (14:03:32)  
L  
B 01  
WIP-RACK Display  
Rack location 1  
CARRIER\_12345678  
BOX\_000012345678  
CK DisplayRack location 1 CARRIER\_12345678BOX\_000012345678"

S3F70 (14:03:32)  
B 00

Display:

**Write display 1 with headline (line 0-3) black, white:**



SECS-II Message traffic

S3F69 (13:41:46)  
L  
B 01  
U1 0  
U1 0  
U1 20  
U1 0  
A "WIP-RACK DisplayRack location 1 CARR\_00012345678BOX\_000012345678"  
U1 12  
S3F70 (13:41:46)  
B 00

Display:

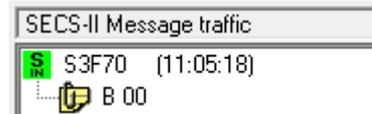


The specification of the data element FONT (font size) is optional.  
The number of max. Characters per line depend on the font size used.

**S3F70: Display data write reply (DISPLAY WRITE, ACK ) (reading device -> host)**

The reading device confirms the written display data.

S3F70  
<B ACKC3 >



#### 9.6.4 Stream 9 (system error)

##### **S9F1: UNRECOGNISED DEVICE ID (reading device -> host)**

The device ID in the header of the message block does not correspond to the expected device ID.

S9F1  
<B[10] MHEAD >

SECS-II Message traffic	
	S1F1 (13:39:33)
	S9F1 (13:39:33)
	B [ 00 01 81 01 80 01 00 00 00 47 ]

##### **S9F3: UNRECOGNISED STREAM TYPE (reading device -> host)**

The reading device does not recognise the stream type in the header of the message block.

S9F3  
< B[10] MHEAD >

SECS-II Message traffic	
	S7F1 (13:43:20)
	S9F3 (13:43:20)
	B [ 00 00 87 01 80 01 00 00 00 49 ]

##### **S9F5: UNRECOGNISED FUNCTION TYPE (reading device -> host)**

The reading device does not recognise the function number in the header of the message block.

S9F5  
< B[10] MHEAD >

SECS-II Message traffic	
	S1F35 (13:53:39)
	S9F5 (13:53:39)
	B [ 00 00 81 23 80 01 00 00 00 51 ]

##### **S9F7: ILLEGAL DATA (reading device -> host)**

The reading device does not recognise the data in the message.

S9F7  
< B[10] MHEAD >

SECS-II Message traffic	
	S9F1 (14:16:17)
	B 00
	S9F5 (14:16:17)
	B [ 00 00 09 01 80 01 00 00 00 5F ]

##### **S9F9: TRANSACTION TIMER TIMEOUT (reading device -> host)**

This message indicates a timeout of a transmission timer and the cancellation of the corresponding transaction. Only the most recently transmitted message (that must be acknowledged by the host) is saved and its acknowledgement is monitored by time.

S9F9  
< B[10] SHEAD >



**S18F3: WRITE ATTRIBUTE REQUEST (WAR) (host -> reading device, reply)**

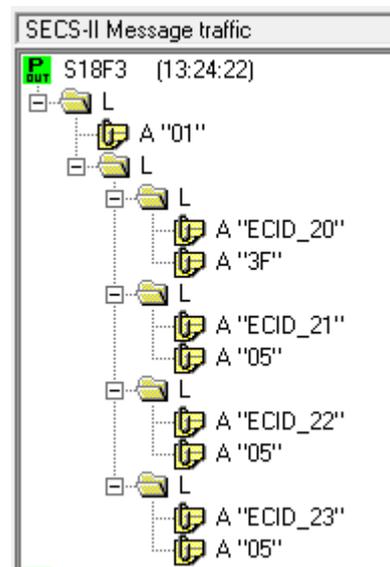
The message transmits a request to the reading device to set (overwrite) the value of the transferred parameters.

The value of the TARGETID is irrelevant with this message (01 to 32).

Up to 10 attributes can be set with a message.

```

S18F3 ,W
<L,2
  <TARGETID>
  <L,n
    <L,2
      1 <ATTRID1>
      2 <ATTRVAL1>
    >
    <L,2
      1 <ATTRIDn>
      2 <ATTRVALn>
    >
  >
>
  
```

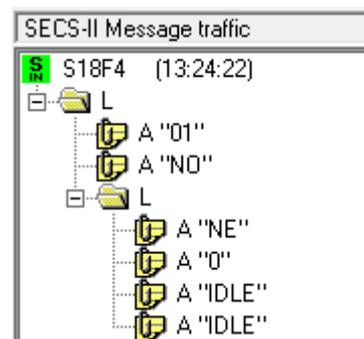

**S18F4: WRITE ATTRIBUTE ACKNOWLEDGE (WAA) (reading device ->host)**

This message acknowledges that the request for writing the parameter values successfully or reports an error.

The value of the TARGETID is irrelevant with this message (01 to 32).

```

S18F4
<L,3
  <TARGETID>
  <SSACK>
  <STATUSLIST>
  >
>
  
```



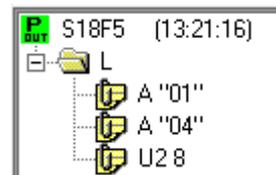
If the ATTRID of the S18F3 message is not known, a communication error (CE) occurs.

**S18F5: READ REQUEST (RR) (host -> reading device, reply)**

This message is used for requesting the antenna head specified in the TARGETID for reading data (from the data area). DATASEG defines the start address of the data to be read. DATALENGTH defines the data volume of the data to be read.

```

S18F5 W
<L,3
  <TARGETID>
  <DATASEG>
  <DATALENGTH>
>
  
```



If both the DATASEG as well as the DATALENGTH are missing (elements with zero length), all pages of the data area are queried. If only the DATALENGTH is missing, all data on the specified start address is queried.

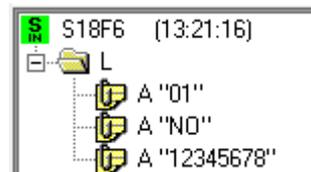
If the TARGETID is not known, a communication error (CE) occurs.

**S18F6: READ DATA (RD) (reading device -> host)**

This message is used to return the requested information of the antenna head specified in the TARGETID or acknowledge the result of the request.

```

S18F6
<L,3
  <TARGETID>
  <SSACK>
  <DATA>
>
  
```



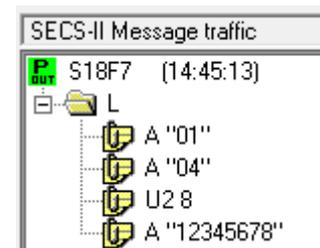
**HFM 6x Gen2.0 Reader**
**S18F7: WRITE DATA REQUEST (WAR) (host -> reading device, reply)**

This message is used for requesting the antenna head specified in the TARGETID to write data. DATASEG defines the start address of the data to be written. DATALENGTH defines the data volume of the data to be written.

```

S18F7 W
  <L,4
    <TARGETID>
    <DATASEG>
    <DATALENGTH>
    <DATA>
  >

```



If both the DATASEG as well as the DATALENGTH are missing (elements with zero length), all pages of the data area are overwritten. If only DATALENGTH is missing or if DATALENGTH has the value zero, all data within the specified section must be written.

If the TARGETID is not known, a communication error (CE) occurs.

If DATASEG is missing (elements with zero length), the DATALENGTH value determines the length of the data to be written. If the length of the data to be written is greater than the value of the DATALENGTH, a communication error (CE) occurs.

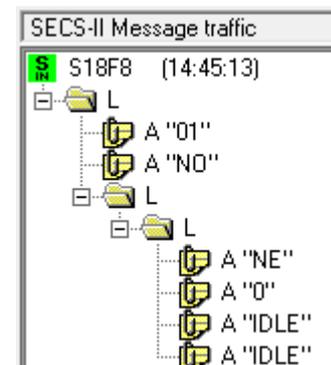
**S18F8: WRITE DATA ACKNOWLEDGE (WDA) (reading device ->host)**

This message indicates whether the process for writing data on the antenna port specified in the TARGETID was successful or failed.

```

S18F8
  <L,3
    <TARGETID>
    <SSACK>
    < L,1
      <STATUSLIST>
    >
  >

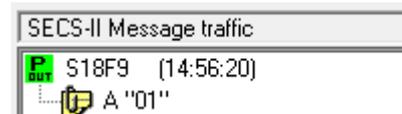
```



**S18F9: READ ID REQUEST (RIR) (host -> reading device, reply)**

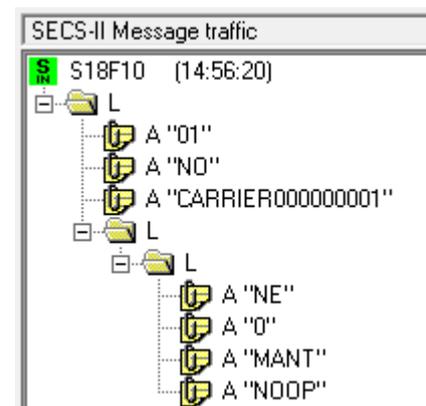
This message is used for requesting the antenna head specified in the TARGETID for reading the MID.

```
S18F9,W
  <TARGETID>
```


**S18F10: READ ID DATA (RID) (reading device -> host)**

This message returns a requested MID from the antenna head specified in the TARGETID.

```
S18F10
  <L,4
    <TARGETID>
    <SSACK>
    <MID>
    < L,1
      <STATUSLIST>
    >
  >
```



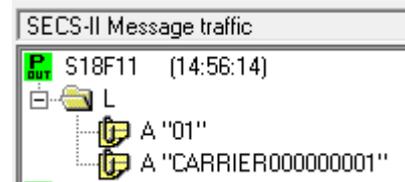
The reading device can be in maintenance mode (MT) or operating mode (OP) to read the MID with the message S18F9.

**S18F11: WRITE ID REQUEST (WIR) (host -> reading device, reply)**

This message is used for writing the MID on the antenna head specified in the TARGETID.

```

S18F11,W
  <TARGETID>
  <MID>
  
```



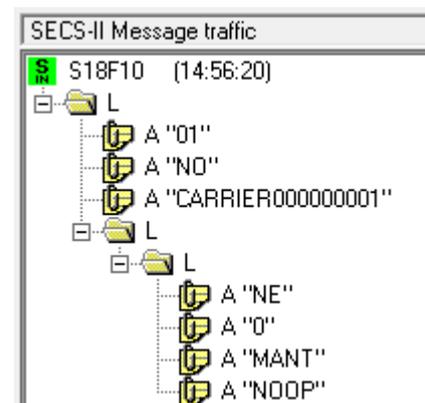
	<p>The reading device must be in maintenance mode to write the MID with the Message S18F11.          If the reading device is not in maintenance mode, the execution is cancelled and acknowledged with SSACK = "EE" equipment error.</p>
--	---

**S18F12: WRITE ID ACKNOWLEDGE (WIA) (reading device -> host)**

This message indicates whether the process for writing the MID on the subsystem specified in the TARGETID was successful or failed.

```

S18F10
  <L,4
    <TARGETID>
    <SSACK>
    < L,1
      <STATUSLIST>
    >
  >
  
```



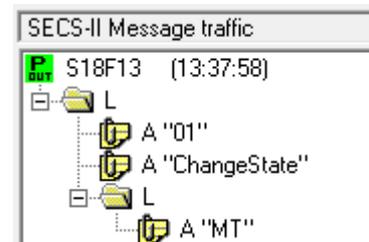
The reading device can be in maintenance mode (MT) to write the MID with the message S18F11.

**S18F13: SUBSYSTEM COMMAND REQUEST (SCR) (host -> reading device, reply)**

This message is used for requesting the subsystem specified in the TARGETID for executing a specific procedure.

```

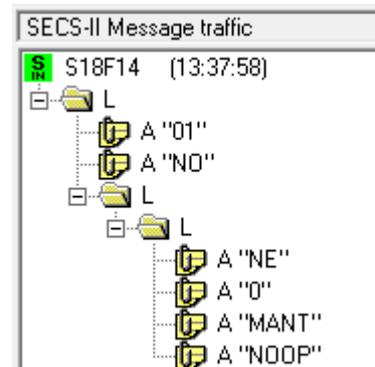
S18F13 ,W
<L,3
  <TARGETID>
  <SSCMD>
  <L,n
    1. <CPVAL>
    ...
    n. <CPVALn>
  >
>
  
```


**S18F14: SUBSYSTEM COMMAND ACKNOWLEDGE (SCA) (Reading device -> host)**

This message reports the result of the requested procedure. (SSCMD)

```

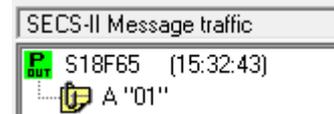
S18F14 ,W
<L,3
  <TARGETID>
  <SSACK>
  < L,1
    <STATUSLIST>
  >
>
  
```



**S18F65: SCAN TRANSPONDER REQUEST (STR) (Host -> reading device, answer)**

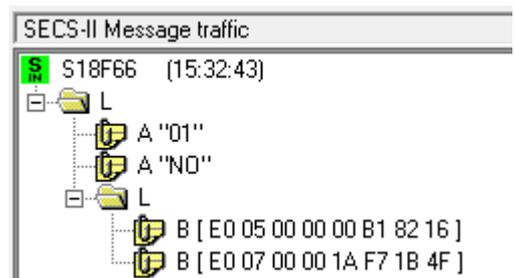
This message is used for requesting the antenna head specified in the TARGETID for executing a scan process.

```
S18F65 W
  <TARGETID>
```


**S18F66: SCAN TRANSPONDER ACKNOWLEDGE (STA) (Reading device -> host)**

This message reports the scan result of the antenna head specified in the TARGETID.

```
S18F66
  <L,3
    <TARGETID>
    <SSACK>
    <L,n
      <UID1>
      ...
      <UIDn>
    >
  >
```



The process returns a UID list with all ISO transponders found in the reading ranges.

If no transponder was detected, the reading device transmits an empty list with <SSACK> NO (normal operation).

If the TARGETID is not known, a communication error (CE) occurs.

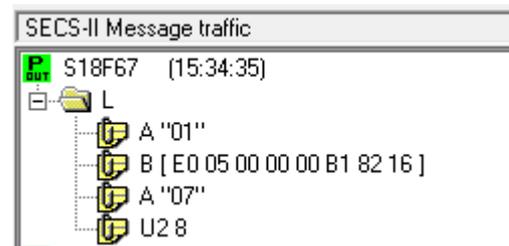
**HFM 6x Gen2.0 Reader**
**S18F67: READ REQUEST UID (RRU) (host -> reading device, reply)**

This message is used for requesting the antenna head specified in the TARGETID for precisely reading data (from the data area) from the transponder and its UID is transferred into the <UID> segment. DATASEG defines the start address of the data to be read. DATALENGTH defines the data volume of the data to be read.

```

S18F67 W
  <L,4
    <TARGETID>
    <UID>
    <DATASEG>
    <DATALENGTH>
  >

```



If both DATASEG and DATALENGTH are missing (elements with zero length), up to 200 bytes of the data area are queried.

If only the DATALENGTH is missing, all data within the specified section is queried.

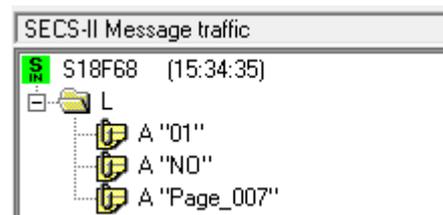
**S18F68: READ DATA UID (RDU) (reading device -> host)**

This message is used to return the requested information of the antenna head specified in the TARGETID or acknowledge the result of the request.

```

S18F68
  <L,3
    <TARGETID>
    <SSACK>
    <DATA>
  >

```



If the TARGETID is not known, a communication error (CE) occurs.

**S18F69: WRITE DATA REQUEST UID (WARU) (Host -> reading device, answer)**

This message is used for requesting the antenna head specified in the TARGETID to write data to the transponder specified in the UID.

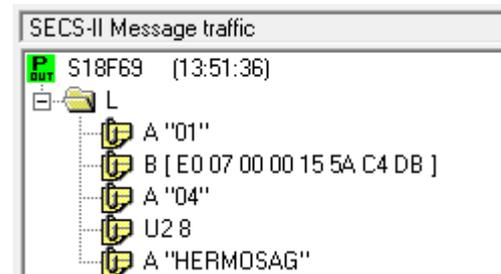
DATASEG defines the start address of the data to be written.

DATALENGTH defines the data volume of the data to be written.

```

S18F69 W
  <L,5
    <TARGETID>
    <UID>
    <DATASEG>
    <DATALENGTH>
    <DATA>
  >

```



If both DATASEG and DATALENGTH are missing (elements with zero length), up to 200 bytes of the data area are overwritten. If only DATALENGTH is missing or if DATALENGTH has the value zero, all data within the specified section must be written.

If the length of the data to be written is greater than the value of the DATALENGTH, a communication error (CE) occurs.

If the TARGETID is not known, a communication error (CE) occurs.

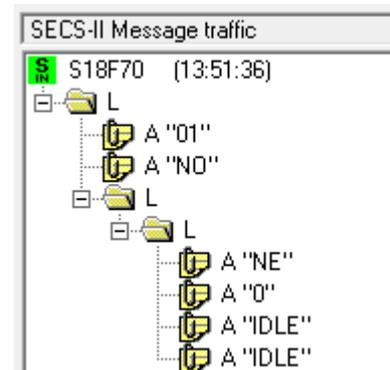
**S18F70: WRITE DATA ACKNOWLEDGE (WDA) (reading device -> host)**

This message indicates whether the process for writing data on the antenna port specified in the TARGETID was successful or failed.

```

S18F70
  <L,3
    <TARGETID>
    <SSACK>
    < L,1
      <STATUSLIST>
    >
  >

```

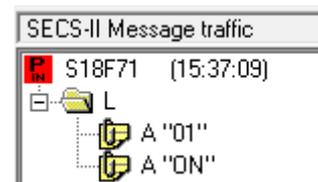


**S18F71: SENSOR STATUS (SS) (reading device -> host)**

This message indicates the status change of one of the reading device's sensors. The TargetID corresponding to the number of the sensor (antenna head).

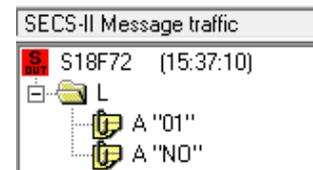
"ON"- the sensor is covered, "OFF" - the sensor is not covered.

```
S18F71
  <L,2
    <TARGETID>
    <SSTATUS>
  >
```

**S18F72: SENSOR STATUS ACKNOWLEDGE (SSA) (host -> reading device)**

The host acknowledges all incoming S18F71 messages.

```
S18F72
  <L,2
    <TARGETID>
    <SSACK>
  >
```



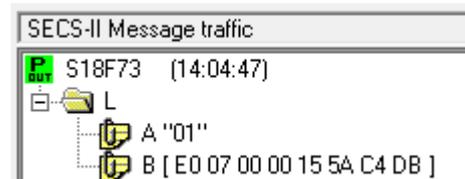
**S18F73: READ ID REQUEST UID (RIRU) (host -> reading device)**

This message is used for requesting the antenna head specified in the TARGETID for precisely reading the MID from the transponder and its UID is transferred into the <UID> segment.

```

S18F73,W
  <L,2
    <TARGETID>
    <UID>
  >

```

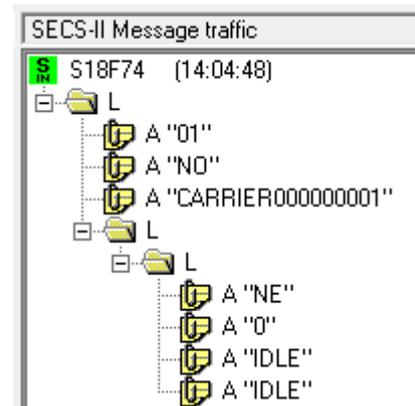

**S18F74: READ ID DATA (RID) (reading device -> host)**

This message returns the requested MID of the transponder.

```

S18F74
  <L,4
    <TARGETID>
    <SSACK>
    <MID>
    < L,1
      <STATUSLIST>
    >
  >

```



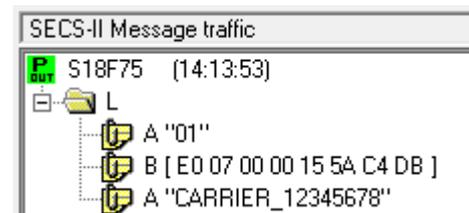
The reading device can be in maintenance mode or operating mode to read the MID with the message S18F73.

**S18F75: WRITE ID REQUEST (WIRU) (host -> reading device, reply)**

This message is used for writing the MID, the transponder specified in the UID and on the antenna head specified in the TARGETID.

```

S18F75,W
<TARGETID>
<UID>
<MID>
  
```



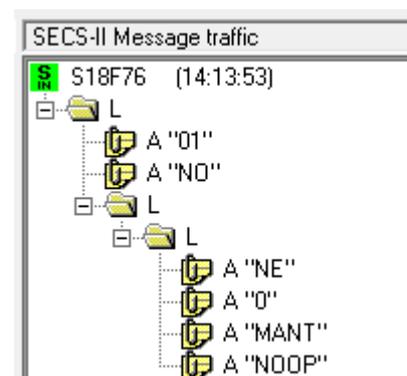
The reading device must be in maintenance mode to write the MID with the message S18F75. If the reading device is not in maintenance mode, the execution is cancelled and acknowledged with SSACK = "EE" equipment error.

**S18F76: WRITE ID ACKNOWLEDGE (WIA) (reading device -> host)**

This message indicates whether the process for writing the MID on the subsystem specified in the TARGETID was successful or failed.

```

S18F76
<L,4
  <TARGETID>
  <SSACK>
  < L,1
    <STATUSLIST>
  >
>
  
```



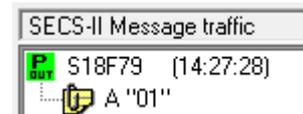
The reading device can be in maintenance mode (MT) to write the MID with the message S18F75.



**S18F79: GET OUTPUT STATUS (GOS) (reading device -> host)**

This message queries the status of the outputs of the antenna head specified in the TARGETID.

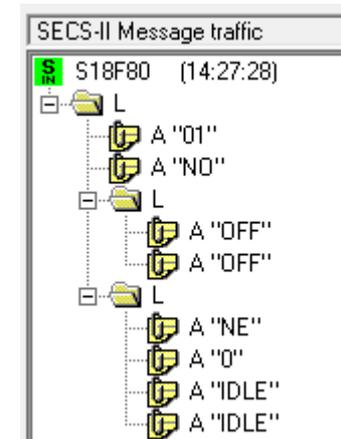
```
S18F79
  <TARGETID>
```



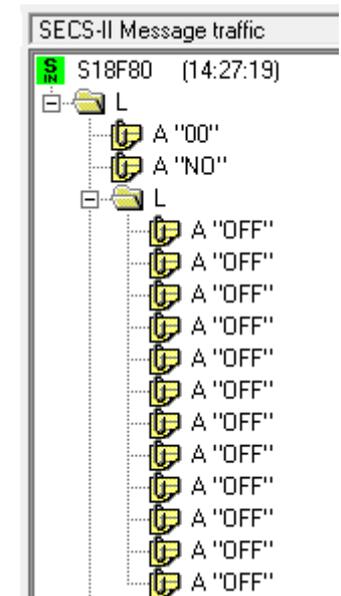
**S18F80: OUTPUT STATUS (GOSA) (reading device -> host)**

This message delivers the status of the output (LED) of the antenna head specified in the TARGETID. All inputs can be queried simultaneously with the TARGETID "00".

```
S18F80
  <L,4
    <TARGETID>
    <SSACK>
    <L,1
      < STATUS Output 1>
      < STATUS Output 2>
    >
    <STATUSLIST>
  >
```



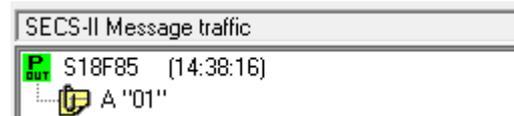
```
S18F80
  <L,4
    <TARGETID>
    <SSACK>
    <L,1
      < STATUS Port 1 Output 1>
      < STATUS Port 1 Output 2>
      ...
      < STATUS Port 6 Output 1>
      < STATUS Port 6 Output 2>
    >
    <STATUSLIST>
  >
```



**S18F85: SCAN UID AND READ ID REQUEST (STR) (host -> reading device, answer)**

This message is used for requesting the antenna head specified in the TARGETID to execute a scan procedure for reading the respective corresponding MID.

```
S18F85 W
  <TARGETID>
```

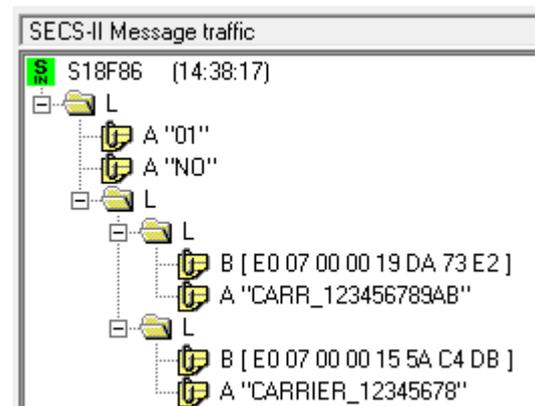


**S18F86: SCAN UID AND READ ID ACKNOWLEDGE (STA) (reading device ->host)**

This message reports the result of the antenna head specified in the TARGETID to the previous read request.

This procedure transmits a UID and MID list of all ISO transponders that were found in the reading range. If the MID cannot be read, it is transferred as an empty field with the UID. The list is limited to 4 transponders. If more transponders are within the antenna field, only the first 4 transponders are displayed.

```
S18F86
  <L,3
    <TARGETID>
    <SSACK>
    <L,n (max. 4)
      <L,2
        <UID1>
        <MID1>
      >
    <L,2
      <UIDs>
      <MIDs>
    >
  >
```



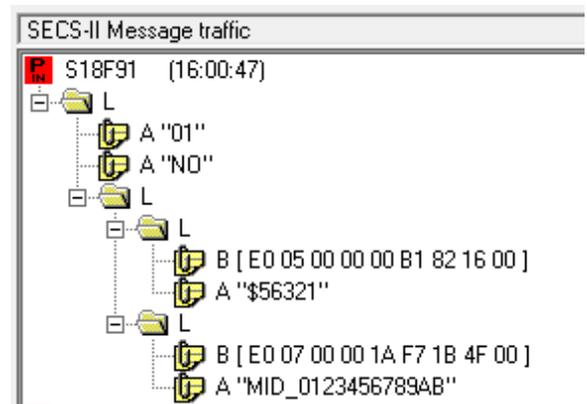
**S18F91: AUTO READ SEND (ARS) (reading device -> host)**

This message reports the result of the reading operation of the antenna head specified in the TARGETID triggered by the sensor.

This procedure transmits a UID and MID list of all ISO transponders that were found in the reading range. If the MID cannot be read, it is transferred as an empty field with the UID. The list is limited to 4 transponders. If more transponders are within the antenna field, only the first 4 transponders are displayed.

```

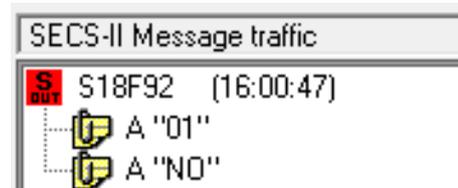
S18F91
  <L,3
    <TARGETID>
    <SSACK>
    <L,n (. 4)
      <L,2
        <UID1>
        <MID1>
      >
    <L,2
      <UIDs>
      <MIDs>
    >
  >
>
  
```


**S18F92 AUTO READ SEND ACKNOWLEDGE (ARSA) (host -> reading device)**

The host acknowledges all incoming S18F91 messages.

```

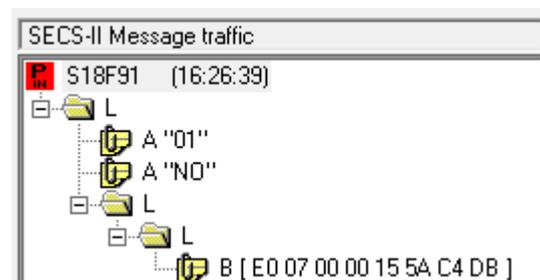
S18F92
  <L,2
    <TARGETID>
    <SSACK>
  >
  
```



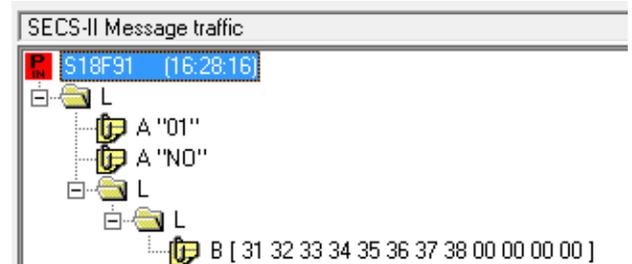
**S18F91: POLLING READ SEND (PRS) (reading device->host)**

This message reports a result of the antenna head specified in the TARGETID triggered by the polling function. Depending on the setting in the polling port (50) and poll mode (88) parameter, the message receives a UID or data of the recognised transponder.

```
S18F91
  <L,3
    <TARGETID>
    <SSACK>
    <L,1
      <L,1
        <UID1>
      >
    >
  >
```



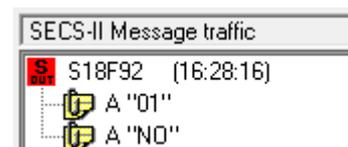
```
S18F91
  <L,3
    <TARGETID>
    <SSACK>
    <L,1
      <L,1
        <DATA>
      >
    >
  >
```



**S18F92 POLLING READ SEND ACKNOWLEDGE (PRSA) (host -> reading device)**

The host acknowledges all incoming S18F91 messages.

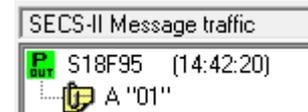
```
S18F92
  <L,2
    <TARGETID>
    <SSACK>
  >
```



**S18F95: GET INPUT STATUS (GIS) (host -> reading device, reply)**

This message queries the status of the inputs of the antenna specified in the TARGETID to receive the status of the input (sensor).

```
S18F95 W
  <TARGETID>
```

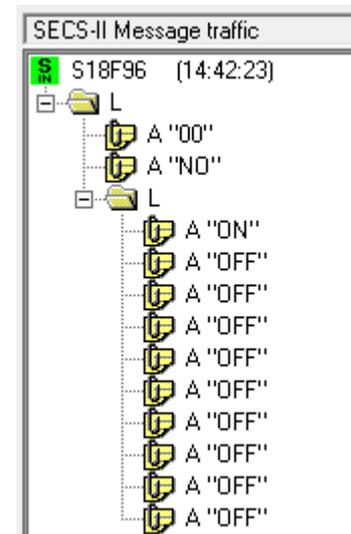

**S18F96: GET INPUT STATUS Response (GISR) (reading device -> host)**

This message delivers the status of the input of the antenna addressed in the TARGETID. TARGETID "00" delivers a status list with all inputs. (6 inputs and 4 DIP switches)

```
S18F96
  L,4
    1 <TARGETID>
    2 <SSACK>
    3 L,1
      <SSTATUS>
```



```
S18F96
  L,3
    1. <TARGETID>
    2. <SSACK>
    3. L,10
      1. <STATUS_INPUT1>
      2. <STATUS_INPUT2>
      3. <STATUS_INPUT3>
      ...
      6. <STATUS_INPUT6>
      7. <STATUS_DIP1>
      8. <STATUS_DIP2>
      9. <STATUS_DIP3>
      10. <STATUS_DIP4>
```



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### 9.6.6 Data element directory

The data elements that are used by default in SECS II messages, which are described in the message details section, are defined in this section.

#### ALARM STATE

Format: A[1]

The value of the alarm state refers to the last reading procedure. The alarm state is activated for a reading or writing error. A successful reading or writing operation deactivates the alarm state. The alarm state is also deactivated when exiting the maintenance mode.

0	...	No alarm
1	...	Alarm

Where used STATUS

#### ATTRID

Format: A[max25]

Designation for an attribute for a special object type.

##### CIDRW attribute definitions:

- "SoftwareRevisionLevel" → Change (version) of the software - maximum 8 bytes
- "CarrierIDOffset" → Offset of the CID in the CID field (MID area)
- "CarrierIDLength" → Length of the CID in the CID field (MID area)

- "ECID\_00" → Parameter 0 - → Gateway ID
- "ECID\_01" → Parameter 1 - → Baud rate
- "ECID\_02" → Parameter 2 - → Inter-character timeout T1
- "ECID\_03" → Parameter 3 - → Block protocol timeout T2
- "ECID\_04" → Parameter 4 - → Reply timeout T3
- "ECID\_05" → Parameter 5 - → Inter-block timeout T4
- "ECID\_06" → Parameter 6 - → Retry limit RTY
- "ECID\_07" → Parameter 7 - → TARGETID high byte
- "ECID\_08" → Parameter 8 - → TARGETID low byte
- "ECID\_09" → Parameter 9 - → Heartbeat time
- "ECID\_11" → Parameter 11 - → ReaderID
- "ECID\_12" → Parameter 12 - → Acknowledgement error message
- "ECID\_16" → Parameter 16 - → Antenna Power Level
- "ECID\_18" → Parameter 18 - → DIP switch activity
- "ECID\_19" → Parameter 19 - → DIP switch status
- "ECID\_20" → Parameter 20 - → Sensor activity (Sensor 1 - 6)
- "ECID\_21" → Parameter 21 - → Sensor delay time for sensor 1
- "ECID\_22" → Parameter 22 - → Sensor delay time for sensor 2
- "ECID\_23" → Parameter 23 - → Sensor delay time for sensor 3
- "ECID\_24" → Parameter 24 - → Sensor delay time for sensor 4

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"ECID_25"	→ Parameter 25	- →	Sensor delay time for sensor 5
"ECID_26"	→ Parameter 26	- →	Sensor watchport for sensor 1
"ECID_27"	→ Parameter 27	- →	Sensor watchport for sensor 2
"ECID_28"	→ Parameter 28	- →	Sensor watchport for sensor 3
"ECID_29"	→ Parameter 29	- →	Sensor watchport for sensor 4
"ECID_30"	→ Parameter 30	- →	Sensor watchport for sensor 5
"ECID_32"	→ Parameter 32	- →	Transponder type
"ECID_33"	→ Parameter 33	- →	Manufacturer type
"ECID_35"	→ Parameter 35	- →	AFI Application Family Identifier
"ECID_36"	→ Parameter 36	- →	Advanced UID
"ECID_37"	→ Parameter 37	- →	MID area
"ECID_41"	→ Parameter 41	- →	CarrierIDMinLength
"ECID_42"	→ Parameter 42	- →	CarrierIDOffset
"ECID_43"	→ Parameter 43	- →	CarrierIDLength
"ECID_44"	→ Parameter 44	- →	FixedMID
"ECID_46"	→ Parameter 46	- →	Scan AFI
"ECID_47"	→ Parameter 47	- →	MID Sign
"ECID_48"	→ Parameter 48	- →	Polling time
"ECID_49"	→ Parameter 49	- →	Polling frequency
"ECID_50"	→ Parameter 50	- →	Polling Port
"ECID_51"	→ Parameter 51	- →	ReadMode
"ECID_52"	→ Parameter 52	- →	WriteMode
"ECID_54"	→ Parameter 54	- →	ScanMode
"ECID_56"	→ Parameter 56	- →	Transmitter delay
"ECID_57"	→ Parameter 57	- →	Modulation
"ECID_60"	→ Parameter 60	- →	SCANMASK REPEAT
"ECID_62"	→ Parameter 62	- →	ISO 15693 Flags
"ECID_63"	→ Parameter 63	- →	Transmitter off delay
"ECID_64"	→ Parameter 64	- →	ISO 15693 Option
"ECID_65"	→ Parameter 65	- →	Autoread page
"ECID_66"	→ Parameter 66	- →	Autoread data length
"ECID_68"	→ Parameter 68	- →	Number of expected tags
"ECID_72"	→ Parameter 72	- →	Scan repeat
"ECID_73"	→ Parameter 73	- →	Scan repeat delay
"ECID_74"	→ Parameter 74	- →	Scan AFI Mode
"ECID_75"	→ Parameter 75	- →	Antenna Power Level 1
"ECID_76"	→ Parameter 76	- →	Antenna Power Level 2
"ECID_77"	→ Parameter 77	- →	Antenna Power Level 3
"ECID_78"	→ Parameter 78	- →	Antenna Power Level 4
"ECID_79"	→ Parameter 79	- →	Antenna Power Level 5
"ECID_98"	→ Parameter 98	- →	Protocol

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"ECID\_99" → Parameter 99 - → Customer mode  
"ECID100" → Parameter 100 - → Customer Parameter Set  
"ECID101" → Parameter 101 - → IO Modul  
"ECID104" → Parameter 104 - → Protocolchange allowed  
"ECID105" → Parameter 105 - → Defaultparameter at Protocolchange  
"ECID107" → Parameter 107 - → Report Saved Events  
"ECID108" → Parameter 108 - → HSMS Session ID  
"ECID112" → Parameter 112 - → HFM Mode  
"ECID113" → Parameter 113 - → Extended Antenna 1  
"ECID114" → Parameter 114 - → Extended Antenna 2  
"ECID115" → Parameter 115 - → Extended Antenna 3  
"ECID116" → Parameter 116 - → Box MID[16]  
"ECID123" → Parameter 123 - → Fine version (read only)  
"ECID132" → Parameter 132 - → Software revision (read only)  
"ECID140" → Parameter 140 - → Serial number (read only)  
"ECID141" → Parameter 141 - → Hardware version (read only)  
"ECID145" → Parameter 145 - → Antenna Power Level 6  
"ECID146" → Parameter 146 - → Polling time port 6  
"ECID147" → Parameter 147 - → Sensor Delay time for Sensor 6  
"ECID148" → Parameter 148 - → Sensor Watchport for Sensor 6  
"ECID149" → Parameter 149 - → Testmode  
"ECID193" → Parameter 193 - → Scan-Workaround 1  
"ECID194" → Parameter 194 - → Scan-Workaround 2  
"ECID195" → Parameter 195 - → Scan-Workaround 3  
"ECID196" → Parameter 196 - → Scan-Workaround 4  
"ECID197" → Parameter 197 - → Scan-Workaround 5  
"ECID198" → Parameter 198 - → Scan-Workaround 6  
"ECID199" → Parameter 199 - → Scan-Workaround Fail  
"ECID209" → Parameter 209 - → Read-Workaround 1  
"ECID210" → Parameter 210 - → Read-Workaround 2  
"ECID211" → Parameter 211 - → Read-Workaround 3  
"ECID212" → Parameter 212 - → Read-Workaround 4  
"ECID213" → Parameter 213 - → Read-Workaround 5  
"ECID214" → Parameter 214 - → Read-Workaround 6  
"ECID215" → Parameter 215 - → Read-Workaround Fail

<b>ATTRVAL</b>	<b>Format: A[max4]</b>
----------------	------------------------

Value of the specified attribute.

**CIDRW attribute definitions:**

"Configuration"	Number of the antenna ports "01" – "06"
"AlarmStatus"	Current CIDRW substate of the ALARM STATE "0" ...NO "1" ...ALARMS
"OperationalStatus"	Current CIDRW substate of IN OPERATION "IDLE" ... Device in IDLE mode "BUSY" ... Reading is busy "MANT" ... Maintenance mode
"SoftwareRevisionLevel"	Revision (version) of the software - maximum 8 bytes

**Head attribute definitions:**

"HeadStatus"	Current state "IDLE" ... Device in IDLE mode "BUSY" ... Reading device is busy "NOOP" ... Not operating
"HeadID"	Antenna port number 01 (2 digits) "01" ... Antenna 1

<b>CMD</b>	<b>Format: U1</b>
------------	-------------------

Display write commands.

Command		Display Data
Code	function	
0x00	update display (displaymemory)	
0x01	clear display + update (white)	-

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0x02	clear display + update (black)	-
0x03	clear display with headline + update (red, yellow or black)	-
0x04	clear Display with headline + update (white)	-
0x05	clear display memory without update (white)	-
0x06	clear display memory without update (black)	-
0x10	write display (black/white) max. 4 lines with 16/20 char	1 ... 64/80 (ASCII) depend on font size (FONT)
0x11	write display (white/black) max. 4 lines with 16 char	1 ... 64/80 (ASCII) depend on font size (FONT)
0x12	write display (bl/rd, bl/ye) max. 4 lines with xx char xx ... font size	1 ... 64/80 (ASCII) depend on font size (FONT)
0x13	Write display (red/wh ye/wh) max. 4 lines with xx char	1 ... 64/80 (ASCII) depend on font size (FONT)
0x14	Write display with headline headline (wh/bl), text (bl/wh) max. 4 lines with xx char	1 ... 64/80 (ASCII) depend on font size (FONT)
0x15	Write display with headline (bl/wh), text (wh/bl) max. 4 lines with xx char	1 ... 64/80 (ASCII) depend on font size (FONT)
0x16	Write display with headline (red/bl), text (bl/red) max. 4 lines with xx char	1 ... 64/80 (ASCII) depend on font size (FONT)
0x17	Write display with headline (bl/red), text (red/bl) max. 4 lines with xx char	1 ... 64/80 (ASCII) depend on font size (FONT)
0x20	Clear and write to display (bl/wh) with update startpixel line and column max. 4 lines with xx char	1 ... 64/80 (ASCII) depend on font size (FONT)
0x21	Clear and write to display (wh/bl) with Update startpixel line and column max. 4 lines with xx char	1 ... 64/80 (ASCII) depend on font size (FONT)
0x22	Clear and write data to display (bl/red bl/ye) without update startpixel line and column max. 4 lines with xx char	1 ... 64/80 (ASCII) depend on font size (FONT)
0x23	Clear and write data to display (red/wh ye/wh) without update startpixel line and column max. 4 lines with xx char	1 ... 64/80 (ASCII) depend on font size (FONT)

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0x30	Write display (bl/wh) without clear display-memory and update startpixel line and column max. 4 lines with xx char	1 ... 64/80 (ASCII) depend on font size (FONT)
0x31	Write display (wh/bl) without clear display-memory and update startpixel line and column max. 4 lines with xx char	1 ... 64/80 (ASCII) depend on font size (FONT)
0x32	Write display (bl/wh) without clear display-memory and without update startpixel line and column max. 4 lines with xx char	1 ... 64/80 (ASCII) depend on font size (FONT)
0x33	Write display (wh/bl) without clear display-memory and without update startpixel line and column max. 4 lines with xx char	1 ... 64/80 (ASCII) depend on font size (FONT)
0x80	negate display white pixel to black	-
0x81	Colored display (red/yellow) black pixel to red, yellow	-
0x82	Colored display (red/yellow, negated) white pixel to red, yellow	-
0x83	Colored display clear cplored pixel to white	-

**COLUMN**
**Format: U1**

Column definiert die Spalte (X-Position) des Cursors. Position 0 ist links.  
 Ab dieser Position wird der Display-Text geschrieben. Die Anzahl der Spalten hängt vom verwendeten Display-Typ ab. Je nach verwendetem Displaykommando wird der Line Wert ignoriert oder als Pixelwert interpretiert. (siehe Datenelement CMD)

Gültiger Bereich:

- do not care    CMD 0x10 - 0x17
- Pixel    0 - 249    2-farbige EInk-Displays schwarz, weiß
- Pixel    0 - 211    3-farbige EInk-Displays schwarz, weiß, rot/gelb

Wird über den gültigen Bereich hinaus (rechts) geschrieben, so werden diese Zeichen ignoriert.

**CPVAL**
**Format: A[max2]**

State query value  
 "OP" ... Operating state

**HFM 6x Gen2.0 Reader**

"MT" ... Maintenance state

**DATA** **Format: A[max200]**

A vector or string consisting of unformatted data.  
Depends on the length of the MID area.

**DATALENGTH** **Format: U2**

Total number of bytes to be sent.  
The DATALENGTH corresponds to the number of bytes to be read or written.

**DATASEG** **Format: A[2]**

Is used for identifying the requested data.  
The DATASEG corresponds to the page number (PAGEID) of the ISO 15693 transponder.  
"00" first page of each transponder or first page of the data area.

**EAC** **Format: B[1]**

Acknowledgement code for a new reading device attribute  
0 ... Parameter successfully set  
1 ... Parameter was not set

**ECID** **Format: U1**

Parameter number of the reading device (see ECV data element)

**ECV** **Format: U1**

Definition of the reading device parameters.  
The values are displayed as decimal values, see → Parameters.

**MDLN** **Format: A[6]**

System model number (hardware version)

**MHEAD** **Format: B[10]**

Header of the SECS message block associated with the faulty message block.

**MID** **Format: A**

Material ID, predefined area on the transponder where the unique code of the cassette / box is saved.  
Depending on the transponder type, the length of the MID can be changed.  
The MID length can set from "0" (no MID) up to "10" (MID occupies the first ten pages).

**OFLACK** **Format: B[1]**

Acknowledgement code for an OFFLINE request.  
0 OFFLINE acknowledgement (reading device is offline)

**HFM 6x Gen2.0 Reader****ONLACK****Format: B[1]**

Acknowledgement code for an ONLINE request.  
0 ONLINE assumed (reading device is online)

**OUTPUT****Format: A[2]**

Number of the output (LED) at the antenna head, always 01 in this hardware version (02 not available here).  
"01" ... Output 1 → integrated LED

**PM information****Format: A[2]**

Information about the operating mode  
"NE" ... Normal execution  
"MR" ... "Maintenance mode" required  
Where used STATUS

**RAC****Format: B[1]**

Acknowledgement code reset  
0 ... Reset was performed  
1 ... Reset was not performed

**RIC****Format: B[1]**

1 ... Power-up reset  
2 ... Software reset (without resetting the Ethernet components)

**SHEAD****Format: B[10]**

Header of the saved SECS message block. Only the last message is saved. It must be acknowledged by the host.

**SOFTREV****Format: A[max 6]**

Software version

**SSACK****Format: A[2]**

Description: Result information about the state of the request with regard to the service request.

"NO" Normal operation  
Indicates the success of the queried procedure.

"EE" Execution error  
Transponder data could not be read. MID sequence cannot be read, since non-exclusively valid ASCII characters were found in the defined MID area. The state of the systems, however, is normal.

"CE" Communication error

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	Syntax error in the message, message format or value.
"HE"	Hardware error Error in the header of the ID reading device/writer, header of the ID reading device/writer is deactivated.
"TE"	Transponder error, reading / writing operation not successful ( <i>tag error</i> )
"NT"	No transponder recognised in the antenna area. ( <i>No tag</i> )

### SSCMD Format: A[max 18]

Description: Indicates a procedure to be executed by the subsystem.

Is used to distinguish between the different subsystem commands displayed.

"ChangeStatus"	... Change status
"GetStatus"	... Query status
"Reset"	... Reset CIDRW
"PerformDiagnostics"	... Diagnostics are performed.
"SetLED"	... Diagnostics are performed.

### SSTATUS Format: A[max 3]

Provides information about the sensor state of a specific head.

"ON"	... Sensor is covered
"OFF"	... Sensor is not covered

### STATUS Format: A[max 32]

Provides information about the state of the external output of a specific head.

"ON"	... Output is on
"OFF"	... Output is off
"FLASH"	... Output flashes
"KEEP"	... Output does not changes its status
"FAST"	... Output flashes quickly
"PULSE"	... Output pulses

### STATUS\_INPUTx Format: A[max 32]

Provides information about the state of the external input of a specific (no. "x").

"ON"	... Input is on
"OFF"	... Input is off
" "	... Input is not activated

### Status list Format: A[2]

The status list provides information about the system state.

Consists of "PM Information" and the current values of the CIDRW attribute "AlarmStatus", "Operating Status" and "HeadStatus".

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Status list

L,4

&lt;PMInformation&gt;

&lt;AlarmStatus&gt;

&lt;OperatingStatus&gt;

&lt;HeadStatus&gt;

**TARGETID****Format: A[2]**

The TargetID is defined with 2 ASCII characters in decimals and corresponds to the antenna connections 1 (01) – 32 (32).

**TIMEOUT****Format: A[2]**

TIMEOUT is defined with 2 ASCII characters in hexadecimals and corresponds to the waiting time in seconds.

01-FF (1-256s), value 00 or an empty means infinite (always on).

**UID****Format: B[8-12]**

Represent the unique code of the transponder (unique ID assigned by the manufacturer).

With ISO 15693 transponders, the UID has a length of 8 bytes.

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**9.6.7 Parameters**

The list of parameters and a description of the individual values are provided below.

No. (DEC)	No. (HEX)	Parameter name	Description
0	0x00	<b>Gateway ID</b>	The gateway ID is a part of the device ID. The reading unit simultaneously functions as a gateway and reading device (CIDRW with integrated reading head). It corresponds to the "Lower Device ID" in the message header. 00 ... 255 Default: 0x00
1	0x01	<b>Baud rate</b>	Data transfer rate of the RS232 interface Default: 192 19200 Baud
2	0x02	<b>Inter-character timeout T1</b>	1 ... 100 1/10 s Default: (10) 1 s
3	0x03	<b>Block protocol Timeout T2</b>	1 ... 250 1/10 s Default: (20) 2 s
4	0x04	<b>Reply Timeout T3</b>	1 ... 120 1 s Default: (45) 45 s
5	0x05	<b>Inter-block Timeout T4</b>	1 ... 120 1 s Default: (45) 45 s
6	0x06	<b>Retry limit RTY</b>	Number of retry attempts for a query or message. Default: 3
7	0x07	<b>TARGETID high byte</b>	High byte of the defined TARGETID
8	0x08	<b>TARGETID low byte</b>	Low byte of the defined TARGETID
9	0x09	<b>Heartbeat time</b>	The reading device transmits a S1F1 message to the host at defined intervals. 0 ... No heartbeat 1 ... 255 1 s (1-255s) Default: 0 ... No heartbeat
11	0x0B	<b>ReaderID</b>	The reader ID is a part of the device ID. The reader ID corresponds to the 7 LSB (lowest bits) of the "Upper Device ID" in the message header. 00 ... 127 (0x00 - 0x7F) Default: 0x00
16	0x10	<b>Antenna power level (all heads)</b>	Output power at the antenna connection Minimum: 200mW Maximum: 1000mW 00 ... 31 Default: 0x0F ... approx. 600mW
18	0x12	<b>DIP switch activity</b>	Activate or deactivate the DIP switches 0x0000 0000 ... All DIP switches are deactivated 0x0000 0001 ... DIP switch 1 is activated 0x0000 1111 ... All DIP switches are activated

			Default: 0x0000 1111 ... 0x0F
19	0x13	<b>DIP switch status</b>	Queries the current position of the DIP switches. Only the parameter can be queried.
20	0x14	<b>Sensor activity</b>	<p>Activate and deactivate sensors 1-6</p> <p>0x0000 0000 ... All sensors are deactivated</p> <p>0x0000 0001 ... Sensor 1 is activated</p> <p>0x0011 1111 ... All sensors are activated</p> <p>Default: 0x0011 1111</p>
21	0x15	<b>Sensor delay / delay time sensor 1</b>	<p>Delay of the sensor event before a procedure (S18F71, S18F91) is triggered.</p> <p>0 ... 255 (1/10s)</p> <p>Default: 1 (0.51)</p>
22	0x16	<b>Sensor delay / delay time sensor 2</b>	<p>Delay of the sensor event before a procedure (S18F71, S18F91) is triggered.</p> <p>0 ... 255 (1/10s)</p> <p>Default: 1 (0.1 s)</p>
23	0x17	<b>Sensor delay / delay time sensor 3</b>	<p>Delay of the sensor event before a procedure (S18F71, S18F91) is triggered.</p> <p>0 ... 255 (1/10s)</p> <p>Default: 1 (0.1 s)</p>
24	0x18	<b>Sensor delay / delay time sensor 4</b>	<p>Delay of the sensor event before a procedure (S18F71, S18F91) is triggered.</p> <p>0 ... 255 (1/10s)</p> <p>Default: 1 (0.1 s)</p>
25	0x19	<b>Sensor delay / delay time sensor 5</b>	<p>Delay of the sensor event before a procedure (S18F71, S18F91) is triggered.</p> <p>0 ... 255 (1/10s)</p> <p>Default: 1 (0.1 s)</p>
26	0x1A	<b>Sensor function / Watch port sensor 1</b>	<p>The watch port parameter defines which action is performed during setup.</p> <p>Bit 0: Box has been removed (S18F71) 0 ... deactivated, 1 ... activated</p> <p>Bit 1: Box has been set up (S18F71) 0 ... deactivated, 1 ... activated</p> <p>Bit 2 - 3: Not used</p> <p>Bit 4: Sensor triggered Inventory</p> <p>Bit 5: Sensor triggered Read</p> <p>Bit 6: 0 ... S18F71 no reply expected, 1 ... S18F71 reply expected</p> <p>Bit 7: 0 ... Input signal not inverted, 1 ... Input signal inverted</p> <p>Default: 0x0000 0011 (S18F71 activated)</p>
27	0x1B	<b>Sensor function / Watch port sensor 2</b>	See parameter 26

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			Default: 0x0000 0011 (S18F71 activated)
28	0x1C	<b>Sensor function / Watch port sensor 3</b>	See parameter 26 Default: 0x0000 0011 (S18F71 activated)
29	0x1D	<b>Sensor function / Watch port sensor 4</b>	See parameter 26 Default: 0x0000 0011 (S18F71 activated)
30	0x1E	<b>Sensor function / Watch port sensor 5</b>	See parameter 26 Default: 0x0000 0011 (S18F71 activated)
32	0x20	<b>Transponder type</b>	The parameter defines the transponder type. The set type is used for reading and writing messages without a UID transfer. The transponder type (manufacturer) corresponds to the 2nd byte of the transponder UID. Default: 5 ... Infineon
33	0x21	<b>Manufacturer type</b>	This parameter defines the exact manufacturer type. The set type is used for reading and writing messages without a UID transfer. The manufacturer type corresponds to the 3rd byte of the transponder UID. Default: 0
35	0x23	<b>AFI - Application Family Identifier</b>	The application family identifier is used for scanning with AFI. (The function is not yet implemented) Default: 0 ... No AFI defines
36	0x24	<b>Advanced UID</b>	The Advanced UID parameter defines whether the UID is transmitted with or without DSFID bytes for scan messages. Default: 0 ... 8-byte UID without DSFID byte
37	0x25	<b>MID area</b>	The parameter defines the MID area. 0 ... 10 pages Default: 4 pages = 16-byte MID area
41	0x29	<b>CarrierIDMinLength</b>	With dynamic CID (FixedMID = 0) it can be specified that a valid CID has a minimum length. Default: 0 check of CID deactivated
42	0x2A	<b>CarrierIDOffset</b>	Defines the offset of the CID (=MID) within the MID area. The valid value range depends on the MID area values and the CarrierIDLength. Default: 0
43	0x2B	<b>CarrierIDLength</b>	Defines the length of the CID (=MID) within the MID area. The valid value range depends on the MID area value and the CarrierIDLength. Default: 16
44	0x2C	<b>FixedMID</b>	Defines the reading and writing behaviour of the CID length defined in SEMI E99-03. 0 ... Dynamic CID length

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			<p>The length of the MID is variable. Valid Lengths are 1–CID length bytes.</p> <p>1 ... Defined CID length  The length of the MID is defined at CID length. A deviation of this length results in an error message.</p> <p>Default: 0</p>
45	0x2D	<b>MIDFormat</b>	Not used, for further developments
51	0x33	<b>Read Mode</b>	<p>The ReadMode parameter defines options during a reading operation.</p> <p>Bit 0-1 ... not used  Bit 2 = 0 ... Workaround for failed read *  Bit 3 ... not used  Bit 4-7 ... Number of read retries</p> <p>Default: 0x10</p>
52	0x34	<b>Write Mode</b>	<p>The WriteMode parameter defines options during a writing operation.</p> <p>Bit 0-3 ... not used  Bit 4-5 ... Number of write retries (0-3)  Bit 6 = 1 ... Rotation of the data bytes  Bit 7 = 0 ... Single block CMD (1 = multiple block)</p> <p>Default: 0x10</p>
54	0x36	<b>Scan Mode</b>	<p>The ScanMode parameter defines options during a scan operation.</p> <p>Bit 0 = 1 ... Full scan, (0= inventory)  Bit 1 = 1 ... Set quiet for next scan  Bit 2 = 0 ... Workaround for failed scan *  Bit 3 = 0 ...  Bit 4-7 ... Number of scan retries</p> <p>Default: 0x1F</p>
56	0x38	<b>Transmitter Delay</b>	<p>The transmitter delay defines the time period between the activation of the transmitter and start of the reading or writing operation.</p> <p>0 ... 256 ms</p> <p>Default: 3</p>
57	0x39	<b>Modulation</b>	<p>The parameter defines the modulation depth of the HF transmission. We recommend using the default values.</p> <p>0 ... Modulation 30%  1 ... Modulation 100%</p> <p>Default: 1</p>
62	0x3E	<b>ISO 15693 Flags</b>	<p>The ISO 15693 flags define some options for the HF transmission. We do not recommend using the default values.</p>

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			Bit 0 = 0 ... ASK (1 = FSK) Bit 1 = 0 ... Low data rate (1 = High rate) Bit 2 = 0 ... Single subcarrier (1 = double subc.) Bit 3 ... 0 ... Modulation 30% (1 = Mod.=100%) Default: 0x08 (depends on the transponder type)
65	0x41	<b>Autoread Page</b>	Defines the start page of the automatic read function. 00 ... 255 (depends on the type of transponder) Default : 0x04 (page 4)
66	0x42	<b>Autoread Datalength</b>	Defines the data length of the automatic read function. 00 ... 255 (depends on the type of transponder) Default : 0x0C (12 Byte)
68	0x44	<b>Number of transponders</b>	Number of expected transponders. If a smaller number of transponders are detected during the scanning process, a workaround is carried out. (see par. 54 ScanMode, Par. 193-215) Default : 0x02
75	0x4B	<b>Antenna 1 Power Level</b>	Output power at the antenna connection 1 Minimum: 200mW Maximum: 1000mW 00 ... 31 Default: 0x0F ... approx. 600mW
76	0x4C	<b>Antenna 2 Power Level</b>	Output power at the antenna connection 2 Minimum: 200mW Maximum: 1000mW 00 ... 31 Default: 0x0F ... approx. 600mW
77	0x4D	<b>Antenna 3 Power Level</b>	Output power at the antenna connection 3 Minimum: 200mW Maximum: 1000mW 00 ... 31 Default: 0x0F ... approx. 600mW
78	0x4E	<b>Antenna 4 Power Level</b>	Output power at the antenna connection 4 Minimum: 200mW Maximum: 1000mW 00 ... 31 Default: 0x0F ... approx. 600mW
79	0x4F	<b>Antenna 5 Power Level</b>	Output power at the antenna connection 5 Minimum: 200mW Maximum: 1000mW 00 ... 31 Default: 0x0F ... approx. 600mW
98	0x62	<b>Protocol</b>	Query of the current protocol 1 ... SECS/HSMS

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			2 ... ASCII Default: 1 SECS/HSMS
99	0x63	<b>Customer mode</b>	The parameter defines different customer-specific behavioural patterns that influence the different reading device parameters. 0x00 ... Establish default values. Attention: the network settings are reset. 0x01 ... Establish default values. The network settings are retained 0x04 ... NXP-Tag default values 0x05 ... Infineon-Tag default values 0x07 ... TI-Tag default values Default: 5 Infineon for CFP=0x25
100	0x64	<b>Customer Factory Parameter set CFP</b>	This parameter is set specifically to customer requirements at the factory.
101	0x65	<b>Customer Parameter I/O module</b>	This parameter is set at the factory for specific hardware. 0 ... Default / None 1 ... IO Module Phoenix (24V) 2 ... IO Module Display
104	0x68	<b>Protocol change allowed</b>	This parameter determines whether an automatic protocol change is triggered when a message is recognized. A detected protocol change leads to a reset. 0... no protocol change allowed 1... protocol change permitted Default: 0 not allowed
105	0x69	<b>Defaultparameter at Protocolchange</b>	This parameter specifies whether default parameters should also be created when a protocol change is detected. 0... do not create any default parameters 1... create default parameters Default: 5 Infineon
107	0x6B	<b>Report Saved Events (Read Only, S18F1)</b>	The parameter is only available if events or errors have been saved and these can be called up as an ASCII string.
108	0x6C	<b>HSMS SessionID</b>	This parameter determines whether the session ID (first 2 bytes of the header) is taken over when receiving HSMS control messages. 0... use default SessionID 0xFFFF 1... accept and use the received SessionID Default: 0 default SessionID
112	0x70	<b>HFM-Mode</b>	0x00 ... standard operating mode 0x01 ... double antenna function activates on antenna port 1-3

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			the additional reading on one additional antenna (4-6) ext. antenna (Par. 113-115) <a href="#">Standard: 0 ... no ext. antenna activated</a>
113	0x71	<b>Ext. Antenne 1</b>	Defines an ext. antenna, which is additionally used when reading antenna 1. The antenna will only be used when the dual antenna function (Par. 112) is activated. <a href="#">Standard: 0 / 4</a>
114	0x72	<b>Ext. Antenne 2</b>	Defines an ext. antenna, which is additionally used when reading antenna 2. The antenna will only be used when the dual antenna function (Par. 112) is activated. <a href="#">Standard: 0 / 4</a>
115	0x73	<b>Ext. Antenne 3</b>	Defines an ext. antenna, which is additionally used when reading antenna 3. The antenna will only be used when the dual antenna function (Par. 112) is activated. <a href="#">Standard: 0 / 4</a>
116	0x74	<b>Box MID [16]</b> (für zukünftige Entwicklungen)	Der Parameter definiert eine MID, die zur Erkennung des Box-Typs verwendet wird. Der Box-Typ dient zur Erkennung der Anzahl der zu lesenden Transponder. <a href="#">Standard: BOX</a>
123	0x7B	<b>Fine version</b> (Read only)	Query of the firmware - fine version.
132	0x84	<b>Software revision</b> (Read only, S18F1)	Query of the firmware version.
140	0x8C	<b>Serial number</b> (Read only, S18F1)	Query of the serial number.
141	0x8D	<b>Hardware version</b> (Read only, S18F1)	Query of the hardware version.
143	0x8F	<b>Software Partnr</b> (Read only, S18F1)	Query of the software partnr.
145	0x91	<b>Antenna 6 Power Level</b>	Output power at the antenna connection 6 Minimum: 200mW Maximum: 1000mW 00 ... 31 <a href="#">Default: 0x0F ... approx. 600mW</a>
147	0x93	<b>Sensor delay / delay time sensor 6</b>	Delay of the sensor event before a procedure (S18F71, S18F91) is triggered. 0 ... 255 (1/10s) <a href="#">Default: 1 (0.51)</a>
148	0x94	<b>Sensor function / Watch port sensor 6</b>	See parameter 26 <a href="#">Default: 0x0000 0011 (S18F71 activated)</a>
149	0x95	<b>Testmode r/w action</b>	Defines the read or write action that is carried

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			out when the test mode is activated via DIP 4. 0 ... do no R/W action 1 ... scan UID 2 ... read (without UID) 3 ... read and write (without UID) Default: 1 scan UID
<p>* Workaround in the event of an incorrect scan or reading</p> <p>The reader repeats failed reading and scanning processes with different power levels and RF parameters in order to minimize the influence of sources of interference and environmental conditions. If incorrect readings can be avoided through these repetitions, parameters 193-199 and 209-212 are incremented.</p> <p>All workaround parameters will be resetted during startup.</p>			
177	0xB1	<b>Read Workaround 1 (Read only)</b>	Read function workaround 1 success Read, power level 31
178	0xB2	<b>Read Workaround 2 (Read only)</b>	Read function workaround 1 success Read, power level 28
179	0xB3	<b>Read Workaround 3 (Read only)</b>	Read function workaround 1 success Read, power level 20
180	0xB4	<b>Read Workaround 4 (Read only)</b>	Read function workaround 1 success Read, power level 12
181	0xB5	<b>Read Workaround 5 (Read only)</b>	Read function workaround 1 success Read, power level 4
182	0xB6	<b>Read Workaround 6 (Read only)</b>	Read function workaround 1 success Read, power level 31, slowmode
183	0xB7	<b>Read Workaround 7 (Read only)</b>	Read function workaround 1 success Read, power level 31, fastmode
184	0xB8	<b>Read Workaround 8 (Read only)</b>	Read function workaround 8 success Read, power level parameter 75-79, 145
185	0xB9	<b>Read Workaround Fail (Read only)</b>	Read function workaround failed
193	0xC1	<b>Scan Workaround 1 (Read only)</b>	Scan function workaround 1 success Inventory, power level 31
194	0xC2	<b>Scan Workaround 2 (Read only)</b>	Scan function workaround 2 success UID scan, power level 28
195	0xC3	<b>Scan Workaround 3 (Read only)</b>	Scan function workaround 3 success Inventory, power level 20
196	0xC4	<b>Scan Workaround 4 (Read only)</b>	Scan function workaround 4 success UID scan, power level 12
197	0xC5	<b>Scan Workaround 5 (Read only)</b>	Scan function workaround 5 success Inventory, power level 4
198	0xC6	<b>Scan Workaround 6 (Read only)</b>	Scan function workaround 6 success UID scan, power level 31, slowmode
199	0xC7	<b>Scan Workaround 7 (Read only)</b>	Scan function workaround 7 success UID scan, power level 31, fastmode
200	0xC8	<b>Scan Workaround 8 (Read only)</b>	Scan function workaround 8 success UID scan, power level parameter 75-79, 145
201	0xC9	<b>Scan Workaround Fail (Read only)</b>	Scan function workaround failed
209	0xD1	<b>Read Workaround 1 (Read only)</b>	Read function workaround 1 success Read, power level 20

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210	0xD2	<b>Read Workaround 2 (Read only)</b>	Read function workaround 2 success Read, power level 28
211	0xD3	<b>Read Workaround 3 (Read only)</b>	Read function workaround 3 success Read, power level 15
212	0xD4	<b>Read Workaround 4 (Read only)</b>	Read function workaround 4 success Read, power level 8
213	0xD5	<b>Read Workaround 5 (Read only)</b>	
214	0xD6	<b>Read Workaround 6 (Read only)</b>	
215	0xD7	<b>Read Workaround Fail (Read only)</b>	Read function workaround failed

**9.7 ASCII table**

DEC	HEX	CTRL	Code
0	0	^@	NUL
1	1	^A	SOH
2	2	^B	STX
3	3	^C	ETX
4	4	^D	EOT
5	5	^E	ENQ
6	6	^F	ACK
7	7	^G	BEL
8	8	^H	BS
9	9	^I	HT
10	A	^J	LF
11	B	^K	VT
12	C	^L	EF
13	D	^M	CR
14	E	^N	SOH
15	F	^O	SI
16	10	^P	DLE
17	11	^Q	DC1
18	12	^R	DC2
19	13	^S	DC3
20	14	^T	DC4

DEC	HEX	CTRL	Code
21	15	^U	NAK
22	16	^V	SYN
23	17	^W	ETB
24	18	^X	CAN
25	19	^Y	EM
26	1A	^Z	SUB
27	1B	^[	ESC
28	1C	^\	FS
29	1D	^]	HP
30	1E	^^	RS
31	1F	^_	US

DEC	HEX	CTRL
32	20	BLANK
33	21	!
34	22	"
35	23	#
36	24	\$
37	25	%
38	26	&
39	27	'
40	28	(
41	29	)
42	2A	*
43	2B	+
44	2C	,
45	2D	-
46	2E	.
47	2F	/
48	30	0
49	31	1
50	32	2
51	33	3
52	34	4
53	35	5
54	36	6
55	37	7

DEC	HEX	CTRL
56	38	8
57	39	9
58	3A	:
59	3B	;
60	3C	<
61	3D	=
62	3E	>
63	3F	?
64	40	@
65	41	A
66	42	B
67	43	C
68	44	D
69	45	E
70	46	F
71	47	G
72	48	H
73	49	I
74	4A	J
75	4B	K
76	4C	L
77	4D	M
78	4E	N
79	4F	O

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DEC	HEX	CTRL
80	50	P
81	51	Q
82	52	R
83	53	S
84	54	T
85	55	U
86	56	V
87	57	W
88	58	X
89	59	Y
90	5A	Z
91	5B	[
92	5C	\
93	5D	]
94	5E	^
95	5F	_
96	60	'
97	61	a
98	62	b
99	63	c
100	64	d
101	65	e
102	66	f
103	67	g

DEC	HEX	CTRL
104	68	h
105	69	i
106	6A	j
107	6B	k
108	6C	l
109	6D	m
110	6E	n
111	6F	o
112	70	p
113	71	q
114	72	r
115	73	s
116	74	t
117	75	u
118	76	v
119	77	w
120	78	x
121	79	y
122	7A	z
123	7B	{
124	7C	
125	7D	}
126	7E	~
127	7F	□

## 10. Service and Troubleshooting

### 10.1 General information



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Follow the basic safety instructions in the chapter Safety instructions.

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- ➔ The maintenance of the reading device and its components may only be performed by the manufacturer
- ➔ Observe the instructions in this section when errors occur. Do not perform any further troubleshooting measures in addition to the described measures.
- ➔ In case of doubt concerning errors and handling them, contact the manufacturer.

### 10.2 Troubleshooting personnel



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Troubleshooting must only be performed by specially trained personnel. In case of doubts concerning the necessary qualifications, contact the manufacturer.

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The handling of device errors by untrained personnel as well as the incorrect handling of the device can result in personal injuries as well as damages to the reading device and/or connected devices.

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**10.3 Safety instructions**

All components of the antenna oscillating circuit carry high voltage.

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Only use spare parts specified by the manufacturer. Unauthorised substitution of parts can result in fire, electric shock or other hazards

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Electrostatic charges damage electronic components within the device. ESD protective measures must be applied prior to opening the unit.

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Carefully remove the housing covers to prevent damage. Do not operate the device when the housing is open.

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Never short circuit the fuse! This may result in fire or damages on the device. Only use fuses specified by the manufacturer.

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10.4 **Software releases**

Release date	Version	Description
2020/28/04	HFM6xS10 FV03	Initial release for 512kB Flashsize
2020/05/06	HFM6xS11 FV02	Initial Release for 1 MB Flashsize
09.02.2021	HFM6xS11 FV04	Initial version HFM6x GEN2 SECS + ASCII Protocol integrated Parameter GEN1 version adopted and indices adjusted due to conflicts.
14.12.2021	HFM6xS11 FV08	Customer parameter default values revised. Implemented workaround for misreads. Workaround Statistics can be called up via parameters.
02.03.2023	HFM6xS11 FV0A	Webserver base version integrated <ul style="list-style-type: none"> <li>- Network settings</li> <li>- System parameter</li> <li>- Reader parameter</li> <li>- Status view</li> <li>- Diagnostic function</li> <li>- Help</li> </ul> HFM-Mode extended antenna function implemented Par. 112 HFM Mode Par. 113 Extended antenna 1 Par. 114 Extended antenna 2 Par. 115 Extended antenna 3 Par. 116 Box-MID[16]  Statistics parameters introduced: Statistics on how many transponders were recognized. Par. 202 Scan 0 transponder Par. 203 Scan 1 transponder Par. 204 Scan 2 transponders Par. 205 Scan >2 transponders
20.04.2023	HFM6xS11 FV0B	Par. 54 ScanMode – Number of repetitions reduced. (due to Extended Workaround) Par. 72 ScanReadRepeat – number of repetitions to 0.  Workaround implemented Extended HFM-Mode implemented with 2 antennas: SECS-CMDs: S18F65, S18F85, S18F67,S18F73
14.07.2023	HFM6xS12 FV00	Webserver <ul style="list-style-type: none"> <li>- Parameters completed</li> <li>- Transponder scan reading function</li> </ul>

		<p>- Statistics integrated New customer parameters implemented Workaround (6 steps) revised The number of transponders to be read can be defined as a parameter (Par.68). Parameter 41 Carrier ID Min Length = 5 Parameter 68 Number of expected transponders for workaround. Workaround parameters: Par. 193-199 Scan Workaround 1-6, Fail Par. 177-185 Read Workaround 1-6, Fail</p>
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## 10.5 Customer service

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Germany

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URL: <http://www.hermos.com/de/produkte/rfid/>  
Downloadarea: <http://www.hermos.com/en/protected/>

## 11. Disassembly and storage

### 11.1 Disassembly

	<ul style="list-style-type: none"> <li>➔ Remove the power supply</li> <li>➔ Remove all cables</li> <li>➔ Loosen and remove the mounting screws</li> <li>➔ Remove the reading device from the installation area</li> </ul>
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### 11.2 Storage

Store the reading device and its components in a clean and dry environment.  
Make sure that the power supply has been removed.  
Observe the required storage conditions specified in the technical data.

## 12. Transport and disposal

### 12.1 Transport

Use a solid cardboard box for the transport.  
Use enough cushioning material to protect the device on all sides.

### 12.2 Disposal

The device and its components are made of various materials.  
Disconnect the electronic components from the housing and dispose of them separately.

	<ul style="list-style-type: none"> <li>➔ Do not dispose of the unit in normal household waste.</li> <li>➔ Dispose of the materials separately and according to the legal regulations of your country.</li> <li>➔ Housing and attachments as plastic waste</li> <li>➔ Electronic components, antennas and cables as electronic waste</li> </ul>
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